

LETTERS AND PAPERS

O N

AGRICULTURE, PLANTING, &c.

ADDRESSED TO THE

BATH AND WEST OF ENGLAND SOCIETY,

FOR THE ENCOURAGEMENT OF

Agriculture, Arts, Manufactures, and Commerce.

VOLUME VII.

PRICE SIX SHILLINGS.

LETTERS AND PAPERS

ON

AGRICULTURE, PLANTING, &c.

SELECTED FROM

THE CORRESPONDENCE

OF THE

BATH AND WEST OF ENGLAND SOCIETY,

FOR THE ENCOURAGEMENT OF

AGRICULTURE,
ARTS,

|| MANUFACTURES,
AND COMMERCE.

VOL. VII.



BATH, PRINTED BY ORDER OF THE SOCIETY,
BY R. CRUTTWELL; &

AND SOLD BY C. DILLY, POULTON, LONDON,
AND BY THE BOOKSELLERS OF BATH, BRISTOL, SALISBURY,
GLOUCESTER, EXETER, &c. &c.

C O N T E N T

OF

VOLUME VII.

	<small>PAGE</small>
A D V E R T I S E M E N T .	<small>vii</small>
Observations on the Management of Woods, and on the present state thereof, particularly in the Western Counties. <i>By Thomas Davis, esq.</i>	1
An Enquiry concerning the state of Timber, &c. now growing in England. <i>By Mr. Joseph Wimpey</i>	22
Of the great improvement which may be made from a largely extended Cultivation of Timber and other Wood, with the means of performing the same with the greatest success and advantage. <i>By the same</i>	32
On the Present State of Naval Timber. <i>By T. South, esq.</i>	46
Observations on the American Buffalo, and his Superiority over the English Ox, in certain Properties; also, on the principal Mineral Productions already discovered in North-America. <i>By George Turner, esq.</i>	56
On the Method of making Parmesan Cheese. <i>By Mr. Prysce</i>	63
Extract from a General View of Agriculture, in the County of Dorset, &c. <i>By Mr. John Claridge</i>	66
On the Properties and Use of Mangold-Wurzel. <i>By Sir Mordaunt Martin, bart.</i>	85
On the Field Culture of Potatoes. <i>By the same</i>	99
On the Poor-Rates. <i>By the same</i>	101
Outlines of a Scheme to alleviate the very unequal burthen of Poor-Rates, &c. <i>By the same</i>	104
Addition to Sir Mordaunt Martin's Scheme to alleviate the Poor-Rates, &c.	106
Remarks on Mr. Pew's Observations on the Poor-Laws. <i>By the same</i>	107
Extracts from a General View of the Agriculture of the County of Wilts, &c. &c. <i>By Thomas Davis, esq.</i>	113
Extracts from a General View of the Agriculture of the County of Gloucester, &c. &c. <i>By Mr. George Turner</i>	222
On the abuse of Spirituous Liquors;—its Effects on publick and private Property, and consequently on National Prosperity. <i>By A. Fothergill, M. D. F. R. S.</i>	253

	PAGE
On the subject of Burnt Ears in Wheat, &c. In Six Letters By Farmer Slouch, and others , —	275—281
On the Construction of Reservoirs to preserve the liquors from Stables, Cattle-Stalls, &c. By Mr. R. Pew	288
Address to the Landholders of this kingdom; with Plans of Cottages for the habitation of Labourers in the Country. By Thomas Davis, esq.	294
A Plan for the General Prevention of Poverty. By Mr. R. Pew	311
On Fattening with Potatoes, and on the Advantages of Drilling. By the Rev. H. J. Cloke	319
Value of Land, with the Rise and Fall of the different Publick Funds. By Sir Thomas Beevor, bart.	321
The Horse and Sweet Chestnut, and the Black Willow, recom- mended for Planting. By Benjamin Pugb, esq.	324
On the Reclamation of a Snipe Bog. By Thomas South, esq.	326
An improved Pedometer described. By Mr. L. Tug-well	330
Observations on Turnip-Cabbage. By Rev. T. Broughton	335
Account of Experiment on Turnip-Cabbage for the Society's Premium in 1793. By the same —	341
Conclusion of account of said Experiment. By the same —	344
A Method of Potatoc Management for preventing the Curl. By Mr. James Chapple	350
A particular Return of an Experiment made in Sheep-Feeding. By John Billingsley, esq.	352
General Index to the Seven Volumes. By Mr. A. Cracker.	

DIRECTIONS FOR PLACING THE PLATES.

Plate to explain Improvement in Hewing Timber, p. 54.

Reservoir in a Farm-Yard, p. 288.

Seven Plans of Cottages, p. 298—310.

Improved Pedometer, p. 330.

Table of particulars of Mr. Billingsley's Experiment on fattening
Sheep, p. 352.

ADVERTISEMENT.

THE publick is here presented with the Seventh Volume of Letters, Papers, and Extracts from the Correspondence of the Bath and West of England Society: the publication of which, from incidents not foreseen, has been several months later than was, in course, expected.

Of the contents, notwithstanding that inequality of merit to which every book of this nature is incident, the committee of superintendance hopes the publick will not think unfavourably. The repeated and flattering proofs which the Society has received of the publick partiality to its volumes, have been noticed with pleasure, and are hereby again acknowledged with gratitude and respect.

This Society, which has now been established near eighteen years, has uniformly exerted its endeavours to promote, as its *main* object, the improvement of *Agriculture*, and those other branches of knowledge which appeared to be most nearly connected with it. The grand inducement to this bent of attention, was a conviction that such a pursuit was most important to the fundamental interests of the nation.

Since the publication of the sixth volume, a strong testimony has been given to the national importance of agricultural

tural knowledge, by the establishment of a National Board of Agriculture. The happy effects of that establishment, in the general diffusion of a spirit of improvement, (more than ever necessary to Britain) this Society embraces, with confidence, the present opportunity of anticipating. And though, from the scope and resources of the Board, a provincial society may hope to be considered as aiding the general cause only at an humble distance, yet that consideration will not be deemed a reason for any relaxation in the ardour of this Society. On the contrary, such an event will not fail to operate as an encouragement to further vigilance, and more strenuous exertion. And that the endeavours of this Society to become more and more useful, may be crowned with the greater success, the correspondence of all ingenious and publick-spirited gentlemen, desirous of aiding its views, is again requested.

The General Index to the Seven Volumes, which accompanies this, it is presumed will be found an agreeable and useful article;—and whatever improvements may be further suggested, in the general œconomy, or publications of the Society, will always be listened to with attention and respect.

BATH, Jan. 1, 1795.

E R R A T A.

P. 53. lines 6 and 7 are transposed.

- 69. l. 1, } read *manufacture*.
- 250. l. 19, }
- 350. l. 20. for *bare* read *bear*.

LETTERS

TO THE

BATH AND WEST OF ENGLAND AGRICULTURE SOCIETY.

ARTICLE I. •

Observations on the Management of Woods, and on the present state thereof, particularly in the Western Counties.

[By Mr. DAVIS, of LONGLEAT, Steward to the MARQUIS of BATH.]

IN consequence of the premium offered by the Bath and West of England Society, in the year 1792, “ To the person who, on or before the first of November 1792, shall write and send to that Society, the best practical treatise on Planting and the Management of Woods; together with the present state of the woods of this country, particularly in the Western Counties;” the writer hereof, who has, for near thirty years past, been employed in the actual management of wood-land, to a very great extent, and who has, at this time, upwards of 2000 acres under his care, in the counties of Hants, Wilts, Dorset, Somerset,

Gloucester, Devon, and Cornwall, begs leave to offer his observations on the subject proposed by the Society. He has confined those observations to the management, and present state, of what is generally called *Coppice-Wood*, and of the Timber growing in such *Coppices*, as supposing that to be the object of the Society's present enquiries.

Uses of Underwood, or Coppice-wood.—The great and never-failing demand for the various articles into which *underwood* is convertible, and which must be supplied by the immediate growth of this kingdom, has always made, and will continue to make, the preservation of woods, an object of attention; but as it is a work, not only of expence, but of time, to bring them to perfection, it behoves those who are in possession of old well-planted woods, to keep them from going to decay; and, if their woods have suffered by age or neglect, to do their endeavours to restore them; for, notwithstanding the present almost general use of pit-coal has considerably diminished the consumption of wood and charcoal, for domestic purposes, the demand is still so very great for underwood, that woods will not only produce sufficient to pay *the rent* of the land on which they grow, but, if in good situations, and well managed, will produce, at least *half another rent*, by the timber which may be raised in them, without any material injury to the underwood.

It

It is a well-known fact, that woods are the best and most natural nurseries for timber, (particularly for oak and ash) and that the underwood contributes greatly by its shelter and protection to the growth of trees; but it has never yet been sufficiently considered, that it is almost incompatible with the present improved state of agriculture, and management of fences, to raise trees (except elms) to any great size, *in hedge-rows*; because the impoverishment of the soil by the roots, and the injury to the crops and fences by the dropping and shade of the tops, more than counterbalance the advantage to be gained by the growth of the timber. And the late acts of parliament for the preservation of the public roads, having, for good reasons, ordered all timber near such roads to be cut, have deprived the land-owners of the power of planting or preserving trees in such situations, and furnished an additional reason for the preservation of woods already planted, and for planting others where necessary, and where the soil and situations are adapted to their growth.

The great demand for underwood in the Western counties, is for the following purposes:

Ash-Poles.—For hop-poles, (in Hants) sheepcribs, rind-hoops for barrels and for rigging of ships, spade-handles, rake-stems, pick-stems, and other

implements of husbandry,—coachmakers, chairmakers, wheelwrights, and carpenters uses, &c. &c.

Hazel.—Sheep-hurdles in Hants, Wilts, and Dorset; spars for thatching; pease and bean sticks, dead hedges, &c. &c.

Alder, Willow, Birch, &c..—Poles for rafters, pattens, clogs, shoe-heels, turner's-ware; coalpit uses, (particularly in the Mendip pits in Somersetshire) rails for fencing, chairmakers uses, &c.

Oak.—For rough domestick uses; and the bark for tanning.

General uses of all.—Faggots, particularly for fuel in farm-houses, and for baking; bavins for lighting fires in towns; thorns and refuse for dead hedges; and particularly charcoal for those manufactories to which pit-coal is not applicable, as well as for stoves in kitchens, &c.

Nature of the Growth of Underwood, Cause of its Decay, &c..—The stocks (or, as they are usually called in the western counties, “Stools”) which produce Underwood or Coppice-wood, being in fact only pollard trees growing under ground; it is obvious that the produce of those stocks must, like the shrouds of pollard trees, be the most abundant, when

when the parent stocks are in the greatest perfection;—that until they attain that perfection, the produce must be small; and that, when they are past that perfection, they gradually decline; the shoots from them become weaker and fewer every successive cutting, and the stocks finally decay and die.

It therefore follows, that to prevent the decay of woods, it is necessary, from time to time, to renew them by raising new stocks, to supply the place of those, which, from time to time, wear out and decay.

But besides the constant and regular decay of age, to which all woods are liable, there are many injuries to which they are subject, and which will very speedily and prematurely bring on their decay, unless proper and effectual methods are taken to prevent those injuries.

The first is, the pernicious custom of suffering cattle to feed in woods, under an idea that, after they are of a certain age, (usually seven years) the shoots are grown out of the way, and that the cattle can do no harm.

Where (unfortunately for the owner of woods) a public right of commonage in woods still exists, it is useless to point out any methods of improving them. For although, in strong, thriving, flourishing woods, it is possible that cattle may do *but little harm* to the underwood, after it is seven or eight years old; yet all young plants, which either spring

up spontaneously, or are planted in them, will be liable to be cropped and kept down by the cattle, and few of them can come to perfection.

And in weak decaying woods, there is *always* a great deal of the underwood so low, as *never* to get out of the reach of cattle, but is continually liable to be cropt and kept down by them, and the decay of the stocks is thereby much hastened.

Another cause of early decay of woods, is *the want of draining* such parts of them as are subject to be moist and damp; *nothing being so prejudicial to wood as too much wet.*

Another cause of decay, is *the custom of suffering woods to grow too old before cutting*, whereby the strong shoots smother the weak ones, and by their dropping, kill the stocks on which they grow. To this may be added the practice of permitting the *buyer* to cut the wood, thereby making it *his interest* to destroy every sapling, and *to cut the underwood as close to the stock as possible*; (which in old woods is very prejudicial to the succeeding shoots)—as also the custom of not obliging the buyers *to clear the woods early in the summer*, so as to prevent the new shoots from being injured by their cattle and carriages.

To recover Decayed Woods.—If it be profitable to plant new woods, it is certainly much more profitable to protect those that are already planted, to fill

fill them up where thin, and to restore them when in a state of decay. The expence is not only lessened by the saving of new fences, but the profit is greatly increased, by the rapid growth of the wood, when planted in situations that are sheltered by other wood already planted.

In those woods where saplings spring up in great numbers *spontaneously*, their growth should by all means be encouraged. At the time of cutting the underwood, these saplings will perhaps be 14 or 15 years old; and it might appear proper, after leaving for timber trees such as are strait and handsome, to cut off the rest for underwood. But great part of the saplings so cut off *at that age*, will not be large enough to produce shoots *sufficiently strong* to get up as fast as the other underwood. These *late* would therefore suffer, and the stocks would never come to perfection. It is, therefore, more adviseable not to cut off such saplings as are intended for underwood, until the *second cutting* of the wood, when (being perhaps near 30 years old) they will throw out shoots *strong enough* to fight their way, and keep pace with the surrounding underwood.

Where saplings do not spring up in abundance spontaneously, young trees must be planted; part of which may be preserved for timber, and the remainder left, to be stubbed off at a proper time for underwood.

Kinds of Wood to be planted.—The kinds of wood to be planted in coppices, either in making new ones, or filling up old ones, must be regulated, partly by the demands of the country, but chiefly by the peculiar aptitude of the soil and situation to produce particular sorts. *Let nature be your guide in planting, and you will seldom do wrong.*

Particular soils and particular situations will always favour particular kinds of trees; we need not look for the reason, but only for the fact. The chalk hills of Hampshire are peculiarly proper for beech. The flinty loams and clays of the same county, for oak and ash;—the mossy steep sides of the Wiltshire downs, for hazel; and the sands of the same county for ash;—the rugged and almost naked rocks of Mendip, in Somersetshire, (near Cheddar) produce the lime tree and the walnut in the greatest luxuriance, and on the highest parts of the same Mendip hills, where no other tree can stand the sea breeze, sycamore flourishes as well as in the most fertile valley.

Taking the general demand of countries, and the peculiarities of different soils, into consideration, there is no kind of wood so generally proper for planting in coppices, as ash. The value of ash-poles being at least one-third more, and frequently as much again, per hundred weight, as that of other poles, (being applicable at all sizes to some useful purpose or other) the timber being always in request,

request, and saleable at any *age* or *size*, at almost the price of oak; and the wood itself being as quick a grower as any, and quicker than most; and above all, there being but few soils from the blackest and wettest bogs, to the highest and most exposed mountains, where it will not grow; are reasons why ash is one of the most profitable woods to plant in such coppices as are favourable to its growth. In soils and situations where ash does not grow kindly, let such other sorts of wood be planted as appear to thrive best *in similar soils and situations in the same country.*

Spanish chesnut, though not so general a grower as ash, is a most excellent wood, either for timber or underwood, and wants only to be more known to be higher in estimation. It partakes much of the properties of oak, but excels it in two points, viz. that it grows faster, and that the sap part of the timber is firmer and less corruptible.

To fill up woods that are grown thin, by age or neglect, the proper time is one year, or at the *utmost* two years, after the underwood is cut. The young plants should be eight or ten feet high, and an inch and an half in diameter at the ground, and should be planted without cutting off. If the soil be dry, no other preparation is necessary than barely digging the holes for the plants. If wet, deep drains should be made to take off the superabundant water. The earth dug from these drains should

be

be thrown out on the lower side of them, and upon this new earth the plants should be planted. If land of this latter description be black and peaty, ash is peculiarly proper for it; and will, if planted on the earth thrown from the drains, make a most surprising progress. If it be a stiff yellow clay, it is generally more favourable to the growth of oak than of ash. In such soils, oak for *timber*, with a mixture of willow, birch, alder, and Spanish chestnut, for *underwood*, will perhaps be the most proper. All these kinds should stand one round of the underwood; and if still weak, should stand two, before those are cut off which are intended for underwood, for the reasons before given. Birch plants are indeed an exception to this rule; they should always be cut off the *first* round of the underwood, for if they are large when cut off, the stocks frequently decay and die. In all mixtures of kinds of wood for coppices, those sorts should be used which are not unfriendly to each other, and which will come round fit to be cut together at the same periods; and such kinds should be allowed to stand for timber, and that at such distances as to injure the underwood as little as possible. The plants for filling up old decayed woods, should be the *strongest* and *best* of their kinds. Those which are weak at first will be drawn up by the surrounding underwood, and become from their increased height still weaker. At the next cutting

ting of the underwood, they will be blown down; or, if cut off, the shoots will be too weak to grow up with the other underwood. Oak, ash, and Spanish chestnut, should be kept in a nursery for this purpose; alder and birch plants grow plentifully, *spontaneously* in some countries, and may be taken up for use; if none such are to be obtained, they may be raised from seed sown on a moderate hot-bed in the open air. Alder is sometimes propagated by taking up old roots, and dividing them into several parts; and hazel may be propagated the same way. Willow is generally planted in cuttings; but a much better way, where there are any old willow stocks, is to plash down the shoots to fill up the vacant places round each old stocks. The wild cherry, which will grow on almost any soil, and is easily propagated, makes an exceeding good underwood, though as yet it is but seldom used for that purpose.

Making of new Coppices.—So much having been said respecting the filling up of old coppices, which is equally applicable to the method of planting new ones, there will be the less occasion of saying much more on the last-mentioned subject; but in choosing spots for making such coppices, care should be taken to select such soils and situations as are proper for the growth of those kinds of wood intended to be planted; to *drain them well* if wet, and particularly to *fence them well* from cattle; and if

if they are covered with bushes and briars, to let those remain for shelter for the young wood; and if there happen to be a moderate quantity of *young oak* and *ash* trees on the spot, to let them stand by all means, always keeping in mind *how necessary shelter is, for the growth of wood of all kinds and sorts.* But in newly planted woods where all the plants are of *the same age*, there is not the same reason for letting them stand before they are stooled off for underwood, as before directed for young trees planted to fill up old woods. Those which are intended for underwood may, in such newly planted woods, be cut off when planted, or at any age from 8 to 14 years without injury: indeed, young woods should not stand too long previous to the first cutting.

Proper Age for cutting Underwood.—The periods of cutting underwood must be regulated by the luxuriance of its growth, and by the demand of the country, and the uses to which the wood is to be applied when cut; but, *in general terms*, the common rule of trade will hold good here, viz. “that *small gains and quick returns make the dealer rich, but long credit ruins him.*” In the article of underwood, not only the interest of money, but the loss of the succeeding growth, tell against the value of standing wood after it is fit to cut, and make it doubly the advantage of the owner to cut his underwood as early as it is saleable. As soon, therefore,

therefore, as *any* kind of wood is fit for the uses of the country, it should *then* be cut ; unless it can be made appear, that it will pay compound interest for standing longer, or, in other words, will pay not only the simple interest of the *first* value, but also the loss of so many years growth of the wood, as so far advanced towards another crop.

Wood merely for fuel can scarcely be cut too young. Hazel is usually fit for hurdles and dead hedges, from nine to twelve years old; ash for sheep-cribs, at the same age; and ash and other woods, for hop-poles, from 11 to 14 years old; while ash for carpenters and other large uses; alder, birch, and willow, for rafters, turner's uses, pattens, clogs, coal-pit uses, &c. must stand from 16 to 20 years old, before the poles are large enough for their respective purposes.

It therefore behoves every owner of woods of the latter description, unless he is public-spirited enough to give up his own profit to the good of the public, to consider well, before he suffers his wood to stand to the age of 16, 18, or 20 years, whether the value of such wood when cut younger, and sold for *other* purposes, added to the interest thereof up to the usual period of cutting, and the gain by the growth between those two periods, will *not more than equal* the value the wood will be of, if suffered to stand so long; and if so, whether he ought not to cut his wood at shorter periods.

He will have this additional satisfaction, that, by more frequent cuttings, his woods will be the less liable to decay, by the strong shoots smothering the weak ones, as is before explained, and will have an opportunity of letting up more saplings for timber than he could otherwise do.

Time of cutting Woods.—There are many opinions respecting the most proper time of the year for cutting underwood, but there is one rule which, on the seller's part, is without exception, viz. that the older the wood is, the later in the spring it should be cut. When *old wood* is cut early in the winter, and a hard winter follows, the damage done to the stocks is very great;—young flourishing wood will bear cutting at any time. But on the part of the *buyer* it is allowed that all woods are more durable, when cut in the most stagnant state of the sap; and in all uses where bending is required, such as hurdles, hoops, and even dead hedges, the wood cannot be cut too early in the winter, being, if cut when the sap is rising, brittle, and unfit for those purposes. Oak underwood will (at the present price of bark) pay well for standing till the sap is up for barking it, and it seldom happens that the stocks are injured by cutting it so late in the year.

Manner of Disposal of Woods.—The best way of disposing of underwood, to answer the purposes of the

the seller, is (in the opinion of the writer of this) to cut it *at the seller's expence before it is sold*; to lay it out in ranges or drifts, according to the custom of the country; to value it in that state, and sell it in such sized lots as the number of buyers will warrant; (always keeping up a sufficient number to make a competition) and particularly to oblige the buyers to clear the whole out of the wood by the *24th day of June, new style*, and never to suffer them to bring their horses into the woods (after any new shoots are shot out) without muzzling them, or at least tying up their heads.

Timber growing in Woods.—In every wood where timber will grow, it should by all means be encouraged, and if it does not come up spontaneously, should be planted. A proper quantity in woods is so far from hurting the underwood, that it is both *necessary* and *useful*, to shelter the underwood and draw it to a proper height; but that quantity must always be regulated, so as to do as little damage to the underwood as possible. Oak and ash timber, and in proper soils Spanish chesnut, are proper for woods. Beech should never be suffered. It is a most unneighbourly tree, and should not grow with any sort but its own—nothing can live under it.

When the woods are cut, it is common and proper to cut such timber as begins to do damage, by its dropping, to the underwood below. This is the *proper*

proper criterion by which timber in woods ought to be cut, if it be the *wish* of the owner, as it is *his interest*, to keep up that proper proportion of timber and underwood, by which each shall receive benefit from the other, and the land produce the greatest profit, of which, in a state of wood-land, it is capable.

STATE of WOODS in the WESTERN COUNTIES.

HANTS.

Of all the Western counties, *Hampshire* has undoubtedly the pre-eminence, with respect to the quantity of wood-land, and the profit arising from it.

The *peculiar aptitude* of the soil to the growth of wood, and particularly of oak timber; the *number of uses* for which underwood is there particularly wanted; the *rapid growth* of oak timber in that county, and its vicinity to the *sea-ports*, where the great demand for oak timber is, and always will be; are the reasons why it has hitherto had, and why, in all probability, it will always keep that pre-eminence.

WILTS.

The south-east part of Wiltshire, which adjoins to the county of Hants, viz. part of the New Forest, and from thence to Winterflow, is exceedingly well wooded, and the woods partake much of the properties of those of Hants. The middle parts, or *downs*

downs of Wiltshire is but sparingly wooded, nor is the soil so natural for wood as the downs of Hampshire, but in almost all the outskirts of the county there are valuable and flourishing woods, viz. Chute forest on the east, Bradon forest in the north, Stanton, Farleigh, Westbury, and Warminster woods on the west, and Cranbourn chace on the south.

DORSET.

The same remark holds good with respect to the county of Dorset, as above made on the county of Wilts, that the downs are *sparingly wooded*, and the soil *not so natural for wood* as that of Hants:—in fact, the soil of both Wiltshire and Dorsetshire downs is *too black, too light, and too loose*, for the growth of wood, particularly for oak timber, but the rest of the county is in general very well wooded, and in many parts the soil is very natural to the growth of both underwood and timber.

SOMERSET.

The county of Somerset is not famous for oak timber; as the middle parts of Wiltshire and Dorsetshire are *too poor* for its production, the middle part of Somersetshire is *too rich*. Oak timber never comes to perfection *in any great quantity*, in any countries *where it is not the weed of the soil*. Stiff heavy land, if *ever so poor*, and indeed if *ever so thin*, generally abounds in oak. The *light, black, loose*

soil of the Wiltshire hills, and the deep, rich, but *also loose* soil, of the moors and marshes of Somersetshire, are equally unfavourable for its *spontaneous* production. Oak timber, and wood of almost all kinds, will undoubtedly *grow* and *flourish* in land of the latter description, *if planted*; but so long as worse land will answer the purpose *equally well*, or *perhaps better*, it will be thought absurd to apply land so valuable for other uses, to the sole purpose of growing wood, or at least in any great quantities. The hills of Mendip were formerly covered with wood, but it is now confined to the sides, on which there are many very valuable and flourishing woods, particularly on the north and west sides of it; but few of them abound in oak timber, nor indeed is the soil or situation perfectly congenial to its growth. On the outskirts of the county, particularly the ancient forest of Frome Selwood on the east, and on several parts of its western boundary, there are some good and well-timbered woods.

DEVON AND CORNWALL.

The counties of Cornwall and Devon, and particularly the latter, are peculiarly natural to the growth of oak, but the sea-breeze from the north channel is so very inimical to it, that, unless in sheltered situations, it seldom comes to perfection, and when the woods (which the owners are apt to let stand to a great age on account of the bark) are once

once cut down, it is difficult to get them to grow up again. This is the reason why the woods on the north coast of Devon and Cornwall appear to be, and really are, in a state of decay. In fact, Cornwall which has long been thin of wood, will in a few years, especially if the high price of oak bark continue, be almost destitute of it. Many parts of Devonshire, where the breeze from the sea, and particularly from the north channel, does not affect them, are well wooded, and the woods well managed and flourishing.

GLoucestershire.

But of all the western counties, there is no instance of so peculiar an aptitude in the soil and climate to produce timber and underwood, and of so little attention being paid to the production of either, and particularly of timber, as in the county of Gloucester. There are very few parts of this kingdom which can boast of so great luxuriance in vegetation as this county. The underwood, on the steep and almost inaccessible sides of the Cotswold hills, frequently produces (wherever the owners take pains to keep the sheep out of it) a clear average rent *from 20s. to 25s. an acre, per annum*; and yet these valuable woods are suffered to be ruined for want of fences, and daily get worse. The bad management of the Forest of Dean, one of the finest nurseries for timber in the kingdom, has so long

been proverbial, that it is to be hoped some steps will soon be taken, to wipe away the stigma, and to make the forest as valuable as nature intended it should be. There are undoubtedly many parts of county, in which as great attention is paid to the preservation of wood, as in other parts of the kingdom; but it cannot be denied, that a want of that attention *in general* is too obvious, in many parts of the county, to escape the notice of every traveller who is a judge of the subject, and which nothing tends to attract so much as the peculiar and almost inconceivable rapid growth of such wood as is protected and taken care of.

Upon a *general enquiry* into the state of the woods in the western counties, and from *an actual knowledge* of a great part of them, the writer hereof is of opinion, that the *quantity of wood-land* in those counties is not reduced *in any great degree*; that in many large tracts of woodland, great advantages have *of late years* been derived from exonerating them, by inclosure acts, or other agreements, from the feed of cattle, to which they were before subject, and by which they were very much injured; that upon the whole, as much attention, or perhaps more, is paid to the preservation of woods, than has been in any former period; that from the quantity of woods *newly planted* within the last few years, and particularly from that spirit of enquiry into *their value* now so generally diffused throughout this kingdom, which will

will point out the necessity of protecting them when planted, and the mode of management most proper and natural for them, according to their several soils and situations; there is at present no great reason to apprehend that any such scarcity of underwood or timber can happen, as will make the want thereof alarming; and as to the advance in the price of underwood and timber, *so much talked of by all persons, and so much dreaded by many;* — a moment's consideration will convince them, that no laws that could be made for the preservation of woods would so effectually contribute thereto, as the idea that the land so applied will pay as well or better than in any other state of cultivation. And as the value of both arable and pasture land in this kingdom, has been regularly on the increase for many years past, and is still increasing, it is necessary that the price of underwood and timber should increase in the same proportion; and so far from being alarmed at the advance in the price of the productions of woods, we should consider that this very advance is the best security we can have for their preservation.



ARTICLE II.

*An Enquiry concerning the state of Timber, &c.
now growing in England.*

[By Mr. JOSEPH WIMPEY,* to the Secretary.]

SIR,

YOUR enquiry respecting the state of timber now growing in England, if taken in its fullest extent, is, perhaps, one of the most important questions that was ever proposed for discussion, either by your very respectable Society, or any other of a similar nature. I am, therefore, not a little surprised that more attention has not been paid to a subject so greatly and universally interesting, not only to the safety of the State, but to the use and convenience of every class of the people.

A writer of the most distinguished abilities, speaking of the maritime state, makes the following observation: “The royal navy of England hath ever “been its greatest defence and ornament; it is its “antient and natural strength; the floating bulwark “of the island; an army, from which, however “strong and powerful, no danger can ever be ap-“prehended to liberty; and accordingly it has been “assiduously cultivated even from the earliest ages.”* If the navy of England was of such immense im-“portance in those early ages, what estimate can be

* Blackstone's Commentaries, vol. i. 417.

made

made of its importance now, when every sea-port in Europe is filled with ships of war, and vessels fitted for commerce?

If this representation be just, it should seem, that the very existence of Great-Britain as a sovereign independent state, and its foreign commerce, which furnishes the riches, and is the pride and glory, and at the same time the admiration and envy of the world, depend almost entirely on the strength and good condition of the navy. Now, as English oak is universally allowed to be the best timber in the world for ship-building, as it is both stronger and beyond all comparison more durable than any kind of timber yet known; it is not to be wondered at, that every one, who has a grain of patriotism in his constitution, should be anxious to learn with certainty, whether a material so necessary not only to our prosperity, but to our existence as an independent sovereign nation, is in a flourishing state, and promises a supply which is abundantly sufficient to answer every demand which in its utmost exigence it can possibly require.

It is the general opinion, that not only oak timber, but wood of all sorts *is*, and long *has* been fast diminishing. There are indeed some (a very few, I believe) who treat the notion as chimerical and unfounded; but if we reflect on the amazing increase of the navy, comprehending ships of war; those employed by the East-India Company, in the Whale, Newfoundland,

Newfoundland, and other fisheries, and the vast increase of those for commerce; the wonder would rather be, where or how a quantity of oak timber sufficient to answer demands so immense should be found; add to all these, the constant demand there is for domestic purposes, and the quantity appears to be truly astonishing. It is true, however, that for domestic use, fir timber has greatly supplied the place of oak; and as it works much easier, and comes cheaper for inside work, it is mostly preferred to it: but timber constantly exposed to the vicissitudes of weather, nothing yet discovered is by any means equal to oak, or any way comparable to it, either for strength or duration, or in the end for cheapness. The price of deal timber hath considerably advanced, and will probably continue to do so; but supposing it should not, it would be neither politic or economical, to depend upon the uncertainty of foreign supplies for an article so necessary, which might be supplied with *certainty* at home, with safety to the public, and much to the interest of individuals.

Whether oak timber, and timber and wood in general, has diminished, and is annually diminishing, is a question which cannot be decided by mere opinion; for opinion is unworthy of regard, unless it be founded on experience and observation. Recourse must therefore be had to facts collected from general observation. Every man, be the place of his

his residence wherever it may, either knows of himself, whether he pays more for timber now than he did 20, 30, or 40 years ago, and the same for wood for fuel. If he does not possess this knowledge of himself, any of his neighbours can give him satisfactory information; but it must be observed, that the Royal Dock-yards are not the proper places for enquiry, for there the prices rise and fall, not in proportion to the increase or diminution of the general stock in the nation, but to its circumstances in regard to peace or war; thus, two or three years since, it is said to have been 30 per cent. lower (the nation being then in profound peace and no war apprehended) than it had been during the last and former wars, or than it is or will be during the continuance of the present war. But the case is quite different in timber for domestic uses, not only as timber of the greatest value for maritime purposes is of the least for domestic use, and *vice versa*; but as for that purpose, a diminution in quantity, and an increased demand, must infallibly advance the price, as it does in every article of commerce without even a single exception. I will explain and confirm this by facts within my own knowledge.

It is now nearly, or about half a century since I began to have some considerable concern in building. I then resided in Berkshire, on the borders of Hampshire; I bought timber at that time of prime size and quality, sawed out in scantlings to the carpenter's

penter's hand, for fourteen-pence a foot, delivered where it was to be used; which, I am informed and believe, could not be bought at the same place, now, little, if any thing under double the price; and I well remember the price of wood for fuel was then upon the advance. Again, about 20 years ago, we bought about 2000 feet of oak timber, about two miles from the place where I now write, for six-pence a foot only; now timber of the same quality could not be bought any where in this neighbourhood for considerably more than double the money. At the same time I sold bark near this place, for twenty-pence the hundred weight, and carried it sixteen miles; this season it has been sold for five shillings a hundred, some for considerably more, and carried only eight miles. Wood for fuel is also advanced here about a third in value; what sold for ten shillings a few years ago, now sells for fifteen.

Since writing the above, I have had some conversation with a dealer in oak bark. He told me a coppice of oak had been lately sold in this neighbourhood for twenty-eight pounds, ten shillings an acre, which the last time it was cut at the same age, was sold only for five guineas. The advance is indeed astonishing, but I have no reason to doubt the truth of it. The coppices in this part of the country are chiefly of oak, which often stand twenty years and upwards, then they bark the poles, and

and sell the wood to the charcoal-makers. It has been observed by one of your members, that oak timber has been lately sold in this country as low as sixpence and fourpence a foot; if so, it must be owing to some local circumstances of a very singular nature, for no where in this neighbourhood can any fuel of any sort be bought so cheap as oak timber would be at that price.

A few years since, a large quantity of timber was cut near Torrington, in this county, and sent to Plymouth; and at this time there is a quantity at or near the same place for the same market; now it should seem, nothing short of necessity, can account for the heavy expence that must attend the carriage from Torrington to Morwellham quay, near Tavistock, which is full thirty miles of the most hilly and very worst road in the kingdom. There it is shipped and carried to Plymouth, which is the nearest way it can go. Does not this clearly prove that timber must indeed be scarce, when it is found necessary to be at such an exceedingly heavy expence to procure it?

This is a subject which at times has occupied my thoughts for many years. The facts above stated on my own knowledge, and the general information obtained from others of whom I have enquired render it impossible for me to entertain the least doubt, that the timber growing in England has been annually decreasing many years: I would therefore

therefore earnestly intreat the LAND-OWNER to examine the truth of this business very carefully, as his own private interest is so materially connected with the security, the safety, and the good of the public in general.

But though the great hazard incurred by the neglect of cultivating oak timber is unquestionably great, it is by no means the whole of what is to be apprehended from it, nor indeed the worst part of it. Food and raiment are considered as articles of the first importance to the subsistence of man; but I believe it would be found upon a fair examination, that the value of the first, which is the chief, is advanced a hundred fold by means of fire. What proportion of the people now living could be subsisted by the whole produce of the earth in its raw unprepared condition? Without fire we could neither bake nor brew, roast, boil, or broil; and how long could men subsist on the roots and herbs of the field and the garden as taken from the earth? These are serious questions, which force themselves to the observation in many parts of England; not merely through apprehension or anticipation, but by present hardships now really existing and severely felt, and loudly complained of. The scarcity of fuel in some parts is so very great, that the poor at the approach of winter are in a state of despondency; I have often heard them express more concern and anxiety on that account, than I ever did at the price of

of corn when at the highest I ever knew it. The fact is, in some parts fuel is not to be got for money; even in Hampshire and Berkshire, counties formerly respectable for the growth of wood, it is now become scarce and dear, and has been long comparatively so. In the latter county, if happily for the inhabitants, immense quantities of peat had not supplied their wants during the whole of the present century, their necessities would have been great indeed; but it is now a melancholy truth that that source of supply is nearly exhausted. Indeed the gentry, and even the middling class of the people there, have long burnt Newcastle coals, which are brought in barges from London to Reading and Newbury, and afterwards carried by land through the adjacent country twenty or thirty miles about. Newcastle coals are likewise burnt in many parts of Hampshire, even near the New Forest, where it is said, there are obvious reasons for wood being cheaper than in most places; yet under all the disadvantages of so long a carriage by land and water, coals are found to be much cheaper fuel than wood.

That fuel should become in most places so scarce and dear, is not difficult to account for. Till lately the commons, and indeed many inclosures, were very well covered with furze sufficient to supply, not only the wants of the labourers and poor cottagers with as much fuel as they wanted, but the farmers and others with sufficient for brewing, washing,

washing, baking, the use of the dairy, &c. Of late years, brick and lime-kilns have been much increased, and a vast consumption of furze has been occasioned thereby. Great numbers of inclosures have been also cleared and converted to the growth of corn: add to these the great number of hedges which have been grubbed up to enlarge fields and extend prospects,—a novel instance of sacrificing convenience and emolument to fashion! and can it be a wonder that fuel is grown scarce?

Were I the owner of a million of acres, I would not suffer one to lie unoccupied. What would not bear corn or grafts, I would plant with wood. There are very few soils, if any, that would not bear wood of some kind or other; and the most ordinary would be very acceptable, where no better is to be got. There are many, many thousand acres in this county, the annual produce of which does not amount to sixpence an acre per annum, which if well planted even with furze would be worth five shillings. The general opinion is, that such land is too sterile and poor to bear any thing; but I am thoroughly convinced this is a great mistake. About eighteen years ago, some thousands of firs of all the different kinds, were planted in some of the worst soils I have seen in this county; for a few years at first, they cut an unpromising appearance, but now they are as fine in all respects as I ever saw; in general they run from eight to ten, some to twelve inches

inches diameter, and from twenty to twenty-five feet high, and promise to make as fine timber of the kind as ever was seen.

In short, in whatever point of view we place this object, it is certainly of the most interesting kind to the good of the country at large. It provides timber for the navy, and secures the safety and independent sovereignty of the state, as well as for buildings of all kinds for domestic purposes; it provides fuel for the use of the poor, and the middle classes of the people, whose very existence will soon, in many parts of the country, absolutely depend upon it; and lastly, it will add to the interest of the land-owner, far beyond what has been generally conceived; I would, therefore, recommend it most earnestly, to their serious consideration, as a matter of the greatest importance to the safety and prosperity of this country.

I should now proceed to offer some considerations for the most successful and advantageous means of improving those lands, which in their present state are almost below estimation, consistently with promoting the growth of timber, &c. as above recommended; but as that would extend this paper, perhaps already too long, to a very inconvenient length, I must request leave to submit it to the consideration of the Society in some future paper.

I am, Sir, &c.

JOSEPH WIMPEY.

Bratton-Clovelly, near Okehampton, Devon, 1794.

ARTICLE III.

Of the great improvement which may be made from a largely extended Cultivation of Timber and other Wood, with the means of performing the same with the greatest success and advantage.

[In a Letter by the same, to the Secretary.]

SIR,

IN a former paper on this subject, which I requested the favour of you to offer to the consideration of your very respectable Society, several facts were adduced that had fallen within my own knowledge, which clearly proved, that the price of timber for domestic purposes, and of wood for fuel, was greatly advanced within the last fifty years; and therefore, that an extensive cultivation was not only expedient, but even necessary, and was become a very important object to the land-owner, as well as the public at large; and therefore I took the liberty of recommending it to their most attentive consideration.

Since writing the paper above referred to, it is said, the distress of the poor in some parts of Scotland for want of fuel hath been so severely felt, that compassion has thought it necessary to bring a bill into parliament for affording them some relief by taking off the duty on coals imported into those parts. The design is undoubtedly merciful, and

it

it will be well if the effect should prove as great as the intention is gracious; and it would certainly be happy for the poor in many, perhaps in most parts of England, if a mode similar in the hoped-for effect could be speedily adopted for their relief; for, it is very certain, the scarcity and high price of fuel is in most places a source of wretchedness almost equal to the want of bread.

A mind duly impressed with these sentiments—the strange neglect of cultivating wood in a country where many, many thousands of acres, which in their present condition afford no profit worthy of notice either to the owner or occupier, therefore, most assuredly, none to the public—cannot help being filled with astonishment and disgust. In this county alone the quantity of land of this description is immense. The sum total of such land in Great-Britain must amount to some millions of acres. But it has been objected, “that planting wood has been so far from being considered as an improvement, that much hath been grubbed up, the ground cleared, and converted into arable or pasture.” The practice was prudent, if the land was proper for either, and must be attended with great advantage; but that is no reason why land should not be planted with wood, when, from its situation and present condition, it is known to be good for little or nothing else; and perhaps it is more than probable, that those very lands so cleared, have been

ameliorated and improved by this wood, which is now eradicated and destroyed; for certain it is, that land, which has been long so occupied, is greatly improved thereby, and rendered sufficiently fertile to produce corn or grass, if its situation be not unfavourable to such productions.

That every kind of vegetable, from the loftiest oak to the minutest plant, thrives better in some soils than in others, is a truth which has escaped the observation of few; and generally the better the soil, the more luxuriant the growth; but fortunately, a soil is rarely to be met with which cannot supply nourishment sufficient for the profitable growth of wood of some sort. It is not always, or indeed often, that plantations of timber and other wood do not prosper through poverty of soil, as has been commonly imagined; but generally from the situation being too much exposed to the unfriendly chilling quality of strong winds, which are injurious, if not destructive to vegetation, in every kind of subject, and nothing suffers more than timber and wood of all kinds, through want of protection and the kindly warmth it affords, as is very evident from numberless instances of strong healthy trees suddenly falling into decay, upon imprudently cutting away the wood growing about them, and too suddenly exposing them to the rigour of a cold and inclement situation.

Advantageous, however, as promoting and extending the planting of timber and wood, in every point of view, may appear; it is not to be understood that I mean the immense quantity of land above-mentioned should be planted; perhaps one acre in twenty, or at most one in fifteen, would be fully adequate to the intended improvement, so that the planting those lands, which in their present state are of very little value, would be so far from diminishing the quantity of pasture and arable land, that it would add immensely to it, as I shall endeavour to demonstrate.

The success of every practice affords the clearest and most satisfactory evidence of the truth and justness of its principles. It is now about eighteen or nineteen years since we began to plant on the spot I now write on: such bits and pieces of land were chosen as afforded no kind of profit whatever. Some a quarter of an acre, some a half, some several, but none of any value. As it was meant by way of experiment, every species of pines and firs which are commonly to be met with were planted; as likewise every kind of forest tree that is usually planted in England. The pines and firs run now in general from 20 to 30 feet high, and their circumference in proportion. I measured one of the largest pinasters a few days since, and at two feet above the ground, the circumference was fifty inches, and a spruce fir at the same height, was thirty inches, and

many silver, Weymouth, and Scotch, considerably more. The forest trees are equally prosperous. A chesnut, planted some years since the above, is between 20 and 30 feet high, and 25 inches in circumference a yard above the ground; and most of the kinds which were planted have thriven equally well, a few of the softer woods only excepted. The poplars, tree willows, and abeles, do not succeed here; they are aspiring trees, and generally shoot up to a great height in a favourable situation; but it seems they cannot bear the rigour of the cold winds in such an elevation, nor do they thrive when protected by hardier trees which shade and overtop them; for it happens to them as to most other plants, when the leading shoot is so much injured as to stop its vegetation, the whole tree soon falls into decay and seldom thrives after.

Wherever the plantation is five, six, or more trees deep, the whole has succeeded to admiration; but when they have been planted single, very few indeed have succeeded. It is true many of them are alive, but never likely to make timber, being stinted in their growth, decrepid and decaying. As the soil, situation, and exposure, is the same for those as the other, the sole cause seems to be the want of that warmth and protection which the other receive from being planted in large numbers. The forest trees succeed no better than the firs and pines if planted single, the beech, hornbeam, and sycamore

sycamore excepted; these, especially the beech, seem to thrive in every soil and situation, in defiance of all wind and weather. Not so the oak and ash; the first particularly suffers as much for want of warmth and protection, as any tree which is a native of this island.

From the above account of the success of these plantations it evidently appears, that planting such soils with wood would be attended with the greatest advantages; not only as affording a large profit arising out of the thing itself, independent of every collateral consideration; but as the certain means of improving very large tracts of land, which in their present condition are of very little value, and by no means capable of improvement, but by being forced in and planted with wood. In this country are vast tracts of land called moors: they are not waste nor commons, but appropriated, though not inclosed; but the owners have a right to inclose them if they choose it. The present value of them is so inconsiderable, that they are not thought worth any expence being bestowed upon them. The only use that is made of them, is to turn out a few sheep upon them, where they run four or perhaps five months at most in the year only. The situation is so exceedingly exposed, cold and bleak, that it bears no grass before the month of June, nor after October, but if it did, no cattle could subsist upon it without being well sheltered.

Necessity is said to be the mother of invention: the fences in this country, especially in the parts most exposed, are generally deep double ditches, with a broad high bank between them: these banks are planted on the top and both sides with wood, mostly oak, for the sake of the bark, though it makes but an indifferent fence; but such is generally the practice of the country. The bank being deep in earth taken from the ditches, the wood in general grows luxuriantly: this kind of fencing is attended with many advantages. The high banks, thus covered with wood, afford protection for the cattle in the winter from the piercing cold storms, and equally from the melting heat and insufferable torment of the flies in summer; thus protected, the grass is forwarder by six weeks or two months than when it is quite exposed, which is a great advantage, and if the land be wet and swampy, which is frequently the case, the ditches serve as drains to carry off the superfluous water. At a proper age the oak is barked for sale, and the wood sold for fuel as far as the farmer's convenience will permit.

Unfortunately great tracts of land in this county are destitute of this improvement, which by such means might be made productive of both corn and grass, to the very great profit of the land-owner, and at the same time a most welcome increase of wood for fuel, for want of which the poor inhabitants are exceedingly distressed. To shew of how

little

little value those extensive tracts of land, called moors, in this county are, I will give you an account of a very small part of one in this neighbourhood.

About two miles from this place is a small part of a moor, which contains about 400 acres ; it belongs to three persons, two of them have each three parts in eight, the other the remaining two eighths. One of the proprietors lets his three-eighths for two guineas a year, the other two for not quite so much in proportion; so that the whole rent amounts to only about threepence halfpenny an acre a year. In this condition I apprehend it has been for ages past, probably it never was of greater value, and unless the spirit of enterprize and improvement should increase, it is very certain it never will.

Some time since I had it in contemplation to purchase it and attempt its improvement, but upon enquiry, was informed one of the owners could not alienate, so my design was frustrated ; however, as I am persuaded the method I purposed to pursue would have proved successful, I will venture to propose it to the consideration of your very respectable society.

The plot of ground in question is quite level, though it lies very high, and exposed to every wind that blows, come from whatever quarter of the heavens it may, without a tree, hedge, or bush, except a few furze bushes, to afford it the least protection. The soil is very dry, and for a few months in sum-

mer is covered with short fine grass, fit only for the walk of a few sheep. Now the method of improvement I propose is as follows:

First; To dig a broad ditch, and raise a high bank all round it, by way of fencing it off from the extensive moors, which are contiguous to it and surround it on every side. The next thing I intended was, to measure out from the inner brink of the ditch, three (or perhaps four would be still better) perch or pole on every side, to form a margin which should be thoroughly ploughed, pulverized, and made ready for planting in the spring. The exterior line should be sown with white-thorn berries in a double row about a foot asunder, row from row. At four feet distance from the same, a shallow furrow should be drawn, and so on at that distance from one furrow to another the whole breadth of the margin. As we advance from the outside, every row of plants will be more and more protected; therefore, the hardiest trees should be planted outermost, which may be in the order following: first, beech, horn-beam, or sycamore; the next may be ash; the third row, chesnut; the fourth, oak; the fifth, cherry; the sixth, pines, firs, or larch; then chesnut again, or a repetition of any of the former, as the planter may judge proper. This would serve as a nursery, and provide plants sufficient to plant all the interior fences. As the moor is about 400 acres, and almost square, we will suppose it to be

260 poles long, and 250 broad, and then it will measure 406 acres.

Supposing that to be the length and breadth of the plot, and we take three poles for the breadth of the plantation on each side, then the measure of the four sides will be 19 acres, (fractions omitted:) if from 406, the supposed amount of the moor, we take 19 for the plantation above described, there will then remain 387 acres, which it is proposed to divide into 36 fields or closes; each field will then contain about ten acres and three quarters, a size sufficiently large to answer every economical purpose. For each interior fence it is proposed to allow a pole of ground, which will be sufficient for a double ditch, if thought necessary, and a broad high bank. These banks will require three lines of sets to plant them, one on each side about two feet from the bottom of the ditch, and one on the top exactly in the middle. It will also conveniently admit of two rows of trees for timber, to be planted about two feet high in the bank on each side, at the distance of a pole from each other: those on one side to be planted opposite to the intervals on the other. The moor divided thus into 36 fields, requires ten hedges, and allowing a pole to the breadth of each, including the ditches, will require six acres; so that the whole to be planted will amount to 25 acres, which is one of wood, to fifteen of arable and pasture.

Now,

Now, if fencing and planting those extensive moors will afford warmth and protection sufficient to render them productive of herbage and grain, of which I can have no doubt, as the soil is as good as many of the inclosures, now in tillage; also that the plantations will succeed and prove effectual, as we have planted many acres of the most worthless soil upon this estate, which greatly exceed all expectation, and afford the clearest demonstration of the certainty of the success, it undeniably follows that such improvement must be inconceivably great. The quantity of fuel and timber that such a plantation would afford, would of itself be a vast improvement, abstracted from every consideration of the vast advantages which would accrue to the fields so inclosed, which may reasonably be estimated in the proportion of from 20 to 30 or more for one.

An extent of ground of 25 acres planted as above, when properly thinned to stand for timber, would support 10,000 trees; these in 30 or 40 years, let them be of whatever kinds you please, would amount to a very large sum, especially if we take into the account the poles and fuel that must be cut out to reduce the timber to its proper distance; but the great and important business is the improvement of the fields which those plantations are meant to protect and defend: an improvement not to be obtained by any other means whatever, which is in the power of man to pursue. It is absolutely the *sine qua non* of

of improvement in those cold, bleak, exposed countries, which without it must remain, from generation to generation for 1000 years to come, as probably it has done for some thousands past.

The most formidable difficulty which occurs in this scheme, is the time and expence required to establish the outward fence. If the outer line be sown or planted with white or black thorn, with holly, crab, beech, &c. it must be fenced for several years, to defend it from the bite of cattle, which requires more patience and expence than is usually allowed, though absolutely necessary; but there is an easy method of making an outward fence, which in two, or at most three years, will be very secure, without further expence and with little trouble.

The ditches and banks being prepared as above, I would advise the planting of a *withy edge on the brink

* **WITHEY.** By this term, I much doubt if I shall be generally understood, it being seldom, I believe, to be met with in books, though very common among workmen and dealers in wood. It is a term of a very comprehensive meaning, as it includes many different kinds of plants, as fallows, willows, osiers, and many others, scarcely known by any but basket-makers, for whose use they are mostly planted; and each of these consist of a great variety of species. Mr. Miller enumerates, I think, only 14; but there are, I believe, near 20 of the osier, as many of the willow, and a great variety of each of the other kinds. The species here meant to be recommended, is of the fallow tribe, and described by Miller under the title Sallow No. 13 and 14. One of them is by some called the mountain fallow, as it will grow on dry banks where most other sorts cannot live. It is of a close firm texture, long lived,

brink of the bank, which should be done in manner following: a sufficient number of strong withy stakes are to be prepared, by cutting them from three and a half to four feet long, and from one and a half to three inches diameter; being cut sharp at the lower end, they are to be thrust or driven into the ground about 15 or 16 inches, or till they are firm, at the distance of about 14 or 15 inches one from another in a line; then an equal number of shorter sets must be prepared; these may be 15 or 16 inches long, and from three quarters of an inch to an inch and half diameter, and must be thrust into the ground about 10 inches deep, leaving about six out, to be planted one in the middle of each two of the former, then they will stand in alternate succession. The tall strong stakes must be fastened together by a whale or kind of chain, such as the hedgers weave on the tops of the dead hedges; they are made of three hurdle rods of the same wood. If stakes and sets are cut any time in January or February, and planted in open weather in a few days after they are cut, very few of them will fail of growing, and in two years time

lived, and very durable in flakes, hurdles, poles, &c. more so than any wood that is proper to be used for that purpose. If cut at six or seven years growth, it is very useful for chair-makers, rakes, forks, prong-flakes, and hoops; and lastly, it is excellent for fuel and charcoal. A hedge thus planted, would be very useful for other purposes, as well as for fencing the ground.

the

the shoots from the stakes and sets will be long enough to be woven flakewise; those from the short sets into the bottom and middle of the hedge, and those from the stakes into the upper part and top of the same. At that age they will be flexible enough to be wrought in without cutting, which is practised in older and larger shoots to the great damage of the hedge. A fence thus managed will be very secure, and stand an age with little expence and trouble.

To conclude: it seems as plain as demonstration can make any thing, that wherever such extensive tracts of worthless land are to be met with, situated and so circumstanced as above, by being inclosed and planted as here recommended, they may be made to produce fuel sufficient to relieve, in a great measure, the distress the labouring poor daily feel for want of it; to supply a large increase of timber for naval and domestick purposes; to increase by its warmth and protection the corn and herbage of the fields, so inclosed, to the very great advantage of the land-owner and the publick. In short, there is not an individual, from the princely owner of thousands and tens of thousands of acres, to the meanest cottager, who would not be greatly benefited by it; therefore, I hope, I shall be forgiven in earnestly recommending it to the attention and encouragement of ALL who are blest with the means of promoting so great and extensive a good.

I con-

I conclude, with ardent wishes for the perpetual
success of your society; and am, sir,

Your most respectful
humble servant,
JOSEPH WIMPEY.

Bratton-Clovelly, near Okehampton, Devon.

ARTICLE IV.

On the Present State of Naval Timber.

TO THE SECRETARY.

SIR,

AS an ingenious correspondent of your's differs widely in opinion with me, respecting the present state of naval timber in the kingdom, and treats the apprehended scarcity of it as a chimera only; pardon me, if I take the liberty of diving deeper into the subject, in proof of the positions by me advanced in the sixth volume of the Society's Memoirs.

In late circuits through countries well known before, I could not but observe that the woods had lost their dignity; acres, which within my memory were replete with noble oaks, have now scarce a riall stick to shew. Woods, where the forest lads have chased the bounding squirrel from tree to tree for

for a mile or more in length, now lie void of timber, desolate and waste. Witnesses from Hampshire, Kent, Surry, Sussex, Hereford, can vouch such assertions to be true, and not confined to narrow districts only; but that the general face of the woodland parts of their respective counties hath of late years lost its most striking features, and the woods themselves their chiefest glories; both their branchy and their towering oaks,

Argument designed to controvert facts must either bewilder the senses by the dazzling blaze of rhetoric, or be established on a firmer basis than the paradox in commerce, on which the reasoning of your correspondent rests.

On his observation, "that the dock-yard prices " have virtually sunk of late, by increasing the me- " tings of timbers they take in;*" permit me to remark, that in taking large pieces at the old price, they favour the merchant by winking at an encroached profit, which has been gradually creeping on, to upwards of sixteen per cent. That in rejecting the small, they do but justice to the crown; for, from an established rule of near a century standing, no sticks under sixty feet meetings were admissible,

* "That is, they now reject timber under a certain size, which till "of late they were obliged to take, to induce the dealers to bring them "the large pieces they wanted. They now take the large pieces at "the old price, and reject the small."

Bath Society's Memoirs, vol. vi. p. 179.

knees, crooks, and compass pieces, only excepted. At that time the round stick of a ton, hard hewn, extended to a load, viz. forty feet of round timber (by the accustomed measurement of the day) produced fifty feet of square timber at the most.

Now, such is the improvement of commerce, or the art of those who are concerned in it, that the round shaft of forty feet disappoints the merchant, and the labourer who chips it is blamed, if it doth not measure sixty feet when hewed; and four trees out of five are made to do it, so great is the improvement in hewing.

Wherefore small timbers (viz. sticks of a ton) which gain the most, if taken at the new metings, are equal to few naval purposes, being fit for sloops, cutters, and inferior vessels only. In time of war, such diminutive stuff (though little in request) must be taken, as your correspondent truly informs us, to induce the merchants to furnish requisites. In time of peace, the yards being consequently cumbered with such trash, the purveyors refuse to admit any more of it.

As to "Hampshire alone being nearly able to supply the common consumption of Portsmouth Dock," which upon an average demands, I presume, 8000 loads a year;* hear what Gilpin says of

* The consumption of the Dock-yards in the whole, is 25,000 loads a year, of which, I have heard, that of Portsmouth amounts to near one-third.

that

that old, extensive, famous nursery of oaks, the New Forest. “*Many parts of it* are now in a state “of extreme decay, being overspread merely with “holmes, underwood, and stunted trees, which, in “the memory of man, were full of excellent oak.”†

“*Setborn wood* † was once the noblest of all forest “scenes, the grandeur and number of its oaks were “the admiration of all who saw them; but its glo- “ries are now over, it contains little more at pre- “sent than shrubs, underwood, and blasted trees.”

“In a few years *Norley-wood* § will vanish; the “wood-cutters have entered it.”

“*Denny-wood* || has once been a noble scene, but “it is now stripped of its principal honours, and “consists chiefly of beech, with a few decrepid, “oaks straggling among them.”

It is not in these woods alone, but far and wide the forest scenes exhibit devastation, the new enclosures only excepted, where the timber stands and spoils, for want of timely and judicious thinning.

“This forest, at the first appointment of a pur- “veyor in 1666,* did send five hundred oaks and “fifty beeches annually to the dock-yards, and “continued so to do, till being found unequal to “the task, the number became reduced to sixty

† Gilpin’s Forest Scenery, vol. ii. p. 35.

‡ Ditto, p. 105.

|| Ditto, p. 148.

§ Ditto, p. 153.

* Ditto, p. 22.

"oaks; which, together with fifty beeches, are still
"annually assigned."

To what a state of devastation then must sixty-three thousand eight hundred and forty-five acres of forest-land be reduced, when they cannot afford one oak from every thousand acres for the yearly supply of the King's navy?* Were devastation confined to a single forest only, the consequence might not be much dreaded: 'but when we see it pervade the land; when private woods, as well as royal forests, groan under the woodman's axe; when the squirrels, which used to skip from oak to oak, are driven "to walk on foot" in search of firs; it is time for us to reflect on the danger of our situation, and on the necessity of refraining from felling half-formed sticks; a growing mischief, alarmingly increased of late by the high price and great scarcity of bark, which has within these few years doubled its former value, and, as your correspondent admits, caused the fall of numerous oaks in Devonshire and Cornwall; which from his account must have been all sap, or blea, of little present worth as timber, but might, if left standing, have been the hopes and safeguard of future generations. Such destruction has been too prevalent in the Eastern, as well as Western counties: to the state of timber in the Northern, I profess myself a stranger. But when

† Gilpin's Forest Scenery, vol. ii. p. 27.

assured

assured from authentic documents,* founded on indisputable facts, that the aggregate of oaks fallen in England and Wales, for thirty years past, hath amounted to *three hundred and twenty thousand loads a year*, where is the man of reflection that will not be alarmed for the consequences of such a demand, considering the present state of the woodlands round him? Whether this amazing quantity be consumed in spokes, in laths, in beer-casks, or what else, it matters not. The question is, doth the progress of young timber keep pace with the consumption? The observations of nine out of ten of the best-informed people with whom I have either corresponded or conversed, justify my opinion that it does not.

Take the country throughout, there may possibly be as many oak saplings in Great-Britain, at the present moment, as there were thirty years ago; but how long doth it take to form naval timber from a sapling? and how can naval timber ever be produced of size, in any sufficient quantity, whilst we continue felling half-grown sticks?

Your correspondent need not fear the want of a demand for oak, that "weed of the country," even should the breweries fail; for navigable canals (which may have their use in furnishing our

* Such are in my possession; though I am not at liberty to publish them.

dock-yards for a season with naval timber from inland countries impervious heretofore) will of themselves exhaust these woods upon their borders, nearly as quick as they rise. Their locks are numerous; their bridges infinitely more so; their barges as capacious as the brewers' tuns: the planking of one and all may possibly be sawed out of full-grown timber, as may be their ribs and braces; but the stanchions of their bridges, with the levers which raise them up and shut their locks, are formed of the buts of young thriving oaks, meting from ten to perhaps twelve feet per stick.

This is nipping hope in its bud. This is the mischief we are bound to guard against. Hence arises the dread of want.

As a purchaser, as a measurer of oak timber (both of which for private use, as far as a considerable extent of mill and water works requires, I acknowledge myself to have been,) I readily yield to your correspondent, who has dealt on a larger scale, the pre-eminence due to him. But, bred near a dock-yard, nurtured in a forest, and habituated to observations on the growth of timber from my very childhood to the age of sixty-three, stronger proof of plenty than the mere assertions of any one must be produced, before I can disbelieve my eyes, or give up my opinion that scarcity is at hand, corroborated as I find it by the returns of able surveyors, employed by the Commissioners of the land-revenue

in almost every part of England, who concurrently declare, " That there is a general and alarming decrease in the quantity of naval timber, both in the forests and on private estates.*" To which the Commissioners themselves, in their report, add, " *general decrease of timber*, is too certain to admit That their information as to the *reality* of the *ge-*
" of any doubt.†"

After such certificates as these, and the preceding evidence of our vast yearly consumption, it behoves us immediately to provide against future want, by a close attention to the preservation of the few thriving oaks we have left, and to the propagation of a stock of young ones to succeed them when they fall. Not suffering the *ipse dixit* of any individual, however ingenious, however well versed in timber he may be, to lull us into imaginary security, lest it prove fatal to these happy kingdoms; on whose maritime exertions, our property, our lives, our liberty, and all that is dear to us, depend.

I am, sir,

Your humble servant,

THO. SOUTH.

Boffington, Hants.

Commissioner's Third Report, p. 4.

† Ditto, p. 5.

P.S. To explain what is meant by the modern improvement in hewing, to those who are not conversant in the business, let circles No. 1 and 2 [*in the plate annexed*] supposed to represent the central part, or usual girting place, of a shaft of oak forty feet long, and the periphery of such circles to be four feet round; then the girt, which is one quarter of the periphery, will be twelve inches, and the measure of such shaft will be forty feet, or a ton.*

When timber was hewed after the old method, the segments *a*, *b*, *c*, *d*, No. 1 were chipped off. A rule was then laid from *e* to *f*, and the number of inches between the perpendiculars *e*, *b*, and *f*, *g*, were considered as the side of a square; which multiplied into itself gave the number of inches contained within its compass, which multiplied by twelve gave the contents of one foot in length, and that again by forty the contents of the tree.

Thus the circle itself girting twelve inches, contains within the periphery 144 square inches;† the triangles *c*, *f*, *g*, *b*, though areas only, are in square timber taken as solids; then by multiplying the

* The scale of these circles and squares being an eighth of an inch to an inch, they will bear trial, and be found on examination to stand the test, as near at least as my dim eyes could draw them.

† Such circle certainly contains more square inches; but from time immemorial, the girt-line folded into four (i. e. quartered) has been received by the timber-measurer as the basis of admeasurement, being convenient, though incorrect.

side e, f, \dagger (or $13\frac{1}{2}$ inches nearly,) into itself, about one hundred and eighty square inches will be produced: that is, the square contains thirty-six inches, or one-fourth more than the circle; and that extended through the stick, the forty feet, or ton of round timber, becomes a load, or fifty feet when squared.

No. 2 is a circle of same size as No. 1; but the segments chipped off at a, b, c, d , in the new method, are much smaller; the triangular areas e, f, g, h , of course considerably enlarged, and the side of the square e, f , lengthened nearly to $14\frac{3}{4}$ inches;‡ which, multiplied into itself, produces about two hundred and sixteen square inches, viz. half as much again (for $72+72=144+72=216$,) as the contents of the circle; consequently, by this slight hewing, a round stick of forty feet becomes half as much more (i. e. sixty feet) when squared.

N.B. Round, or girt measure, gives less than the real contents of a stick. Square measure gave at all times more, now much more.

$\dagger 13.5$	$\ddagger 14.75$
13.5	14.75
$\underline{ }$	$\underline{ }$
675	7375
405	10325
135	5900
$\underline{ }$	$\underline{ }$
182.25	1475
$\underline{ }$	$\underline{ }$
	217.5625

ARTICLE V.

Observations on the American Buffalo, and his Superiority over the English Ox, in certain Properties; also, on the principal Mineral Productions already discovered in North-America.

[By GEO. TURNER, Esq; Judge of the Western Territory.]

Communicated by A. FOTHERGILL, M.D. F.R. S.

DEAR SIR, Philadelphia, May 9, 1793.

YOU have laid me under another, and very particular obligation; you have procured me an honour to which, I am fearful, I had no just claim. I esteem it a mark of your polite and friendly attention, and beg you to accept, in return, my warmest acknowledgments. Assure, Sir, the Bath and West of England Society how greatly I am flattered by the honours they have done me, in placing my name among the members of a body so truly respectable. If at any time, and in any manner, I can assist or promote the laudable views of the Society, they may depend on the best of my poor endeavours.

I have perused, with much satisfaction, the Rules and Premiums of the Society. You have wisely made agriculture the chief object of the institution. I count it among the noblest pursuits of man. Having

ing ever myself been a friend to agriculture, you will readily conceive the interest I take in its improvement.

Perhaps, at a day not far distant, America will have the satisfaction of seeing her buffalo introduced to the attention and convenience of the English, and other European farmers. This animal might be made the farmer's best friend : he is gregarious, docile, alert, and of surprising strength ; his carcase affords excellent beef; and the horns, which are jet black and of a solid consistence, take a polish of wonderful beauty : they can be converted into fabrics of use and ornament; such as mugs, tumblers, cutteaux and knife-handles, &c. &c. In this way we sometimes apply them ; and when ornaments of silver, or mother-of-pearl, are employed, the contrast with the polished black of the horn is agreeably striking.

The American buffalo is, if I mistake not, the bison of Buffon. Immense herds of this animal roam at large, in Interior America. From Green River to the Mississippi, the shores of the Ohio are lined with them. The hunters are too apt to destroy them wantonly : a circumstance much to be regretted, and not to be prevented. Frequently have I seen this fine animal killed ; and, excepting the tongue and the tallow, left on the ground, a prey to the tygers, wolves, and eagles. The boss on the shoulders of the buffalo is, as well as the tongue,

tongue, extremely rich and delicious,—superior to the best English beef. It is usual to cure the tongues, and transport them to New-Orleans; where they are sure to meet with a good market.

There is a singular, an affecting trait in the character of the buffalo, when a calf; and my feelings have severely felt it. Whenever a cow buffalo falls before the murdering lead of the hunters, and happens to have a calf, the helpless young one, far from attempting an escape, stays by its fallen dam, with signs expressive of strong and active natural affection. The dam thus secured, the hunter makes no attempt on the calf, (knowing it to be unnecessary) but proceeds to cut up the carcase: then laying it on his horse, he returns towards home, followed by the poor calf, thus instinctively attending the remains of its dam. I have seen a single hunter ride into the town of Cincinnati, between the Miames, followed in this manner, and at the same time by three calves, who had lost their dams by this cruel hunter.

Since I have expressed a wish to see the buffalo domesticated on the English farms, I will now mention a fact concerning it, within my own knowledge. A farmer, on the Great Kenhawa, broke a young buffalo to the plough; having yoked it with a steer taken from his tame cattle. The buffalo performed to admiration. Enquiring of the man, whether he had any fault to find with the buffalo's performance,

he answered, there was but one objection to it: the step of the buffalo was too quick for that of the tame steer. " My friend," said I, " the fault lies " not in the buffalo, but in the steer: what you term " a fault in the former is really an advantage on its " side." Till this moment, the man had laboured under one of those clouds of prejudice but too common among farmers. He had taken the ox of his father's farm, as the unit whence all his calculations were to be made, and his conclusions drawn:—it was his unchangeable standard of excellence, whether applied to the plough or to the draught. No sooner was my observation uttered, than conviction flashed on his mind. He acknowledged the superiority of the buffalo.

But there is another property in which the buffalo far surpasses the ox:—his strength. Judging from the extraordinary size of his bones, and the depth and formation of his chest, I should not think it unreasonable to assign nearly a double portion of strength to this powerful inhabitant of the forest. Reclaim him, and you gain a capital quadruped for the draught and for the plough: his activity peculiarly fits him for the latter, in preference to the ox.

If this part of my letter, respecting an animal but little understood in Europe, and not sufficiently noticed in America, should appear to you not altogether uninteresting, nor too foreign to the immediate

diate objects of the Bath Society, you are at liberty to communicate it, if you please.

We will now return to your favour before me; the perusal of which has given me great pleasure.

You very properly conceive that America abounds in various metals. I believe she has a full proportion. We have multifarious proofs of it.

Native malleable copper is found in several parts, and sometimes in blocks of considerable magnitude; —witness the southern shores of Lake Superior. A substance resembling *block-tin* has been discovered on the Siota. What this metal is, I cannot yet determine, having never assayed it. As it is not mineralized with any other body, but, on the contrary, is pure and malleable, pervading in ramifications the mass of stone that contains it, I conceive it cannot be tin. It may possibly be a *new* metal; or, *possibly*, fine silver. *Lead* is abundant in the country west of the mountains; and there is a mine of it in Virginia, worked on an extensive scale, and, I am told, with considerable profit. The Western Territory affords very rich specimens of this mineral. *Black Lead* is common in many parts, without being confined to that or this side of the mountains. Hitherto, it has been applied solely to the making of crucibles, and to some inferior purposes. None of a quality sufficiently tenacious for pencils has yet been discovered, or, rather, sought for. Some *silver ore* has been seen, here and there:

but

out there can be little doubt that considerable mines of it lie hidden in that enormous chain of mountains which separates the Eastern from the Western part of this continent.—Long may they remain buried ! and may Americans be taught, by the sweets of experience, that it is not the digging into the mine, but the careful cultivation of the soil, which yields the greatest quantity of the precious metals ! Unhappy Mexico ! unhappy Peru ! and Spain herself not happy !

Besides the above, we have plenty of *iron, salt,* and *coal*; and, in some places, *alum*, and *sulphur*. The coal, of what is called *Duncan's Mine*, at Pittsburg, is equal to the best I have seen in the English counties of Northumberland and Durham. I am possessed of some curious specimens of this fossil, in all its stages, from the vegetable to the coal state.

With respect to the *cochineal*, it is by no means a stranger to the northern continent of America. I have repeatedly seen the insect in East-Florida, Georgia, and South-Carolina; of all which countries it is a native: but in West-Florida only did I see the true plant on which it feeds in more southern countries—and that but seldom. In Carolina and Georgia, where they have the *dwarf opuntia* only, I have seen the plant white with these insects; so numerous were they in a certain season of the year: It will be some time, however, before cochineal will attract

attract the attention of our planters: their staples, rice, indigo, and tobacco, will forbid it.

I observe, with singular satisfaction, the many discoveries and improvements of the present generation. This, Sir, is an age of science—an epoch of great events. It will stand as such on the future records of history, when the veil of prejudice shall be drawn aside, and the mirror of truth introduced. By the splendour of its spirit and researches; by the magnitude of revolutions now crimsoning the world with blood; the latter end of the eighteenth century will astonish and confound succeeding ages.

I shall write to you again. At present I am obliged to leave off, to forward the last preparations for my journey westward.

I beg you, good Sir, to believe me impressed with sentiments of esteem towards you; and that I am

Your obliged

and most obedient servant,

G. TURNER.



ARTICLE VI.

*On the Method of making Parmesan Cheese, by
Mr. Pryce, of Sarum, then at Rome.*

[In a Letter to the SECRETARY.]

SIR,

Rome, Jan. 1, 1793.

AS the attention of the society is particularly directed to some dairy counties, it may not perhaps be unacceptable, if I send you an account of the method of making the famous Parmesan cheese.

Amongst the friendly offices of Sig. Moschata, the celebrated professor of anatomy at the university of Milan, I was introduced to Sig. Vitabni, who is noted for his dairy, and lives about two miles from the Roman gate of that city. I trust that none of my countrymen will think the profession of a dairyman disgraced in the person of Sig. Vitabni, when I inform them that he keeps a chariot and pair of horses that would do no discredit to an English nobleman; and if I may judge from the number of poor I saw relieved at his door, appearances are not his only recommendation.

At ten o'clock in the morning, five brents and a half of milk, each brent being about forty-eight quarts, was put into a large copper, which turned on a crane, over a slow wood-fire, made about two feet

feet below the surface of the ground. The milk was stirred from time to time ; and, about eleven o'clock, when just luke-warm or considerably under a blood-heat, a ball of rennet, as big as a large walnut, was squeezed through a cloth into the milk, which was kept stirring. This rennet was said to have been purchased of a man at Lodie, famous for the composition ; but that it was principally made of the same part of the calf as we use in England for that purpose, mixed up with salt and vinegar : it appeared to me to be also mixed with old cheese. I much doubt whether there was any great secret in the composition : but it seems to me that the just proportion of rennet is a matter of consequence, which is not in general sufficiently attended to. By the help of the crane, the copper was turned from over the fire, and let stand till a few minutes past twelve ; at which time the rennet had sufficiently operated. It was now stirred up, and left to stand a short time, for the whey to separate a little from the curd. Part of the whey was then taken out, and the copper again turned over a fire sufficiently brisk to give a strongish heat, but below that of boiling. A quarter of an ounce of saffron was put in, to give it a little colour ; but not so unnaturally high as some cheeses in England are coloured ; and it was well stirred from time to time. The dairy-man (this is not women's work in Italy) frequently felt the curd. When the small, and, as
it

it were, granulated parts, felt rather firm, which was in about an hour and half, the copper was taken from the fire, and the curd left to fall to the bottom. Part of the whey was taken out, and the curd brought up in a coarse cloth, hanging together in a tough state. It was put into a hoop, and about a half-hundred weight laid upon it, for about an hour; after which the cloth was taken off, and the cheese placed on a shelf in the same hoop. At the end of two, or from that to three days, it is sprinkled all over with salt: the same is repeated every second day, for about forty to forty-five days; after which no further attention is required. Whilst salting, they generally place two cheeses one upon another; in which state they are said to take the salt better than singly.

The whey is again turned into the copper, and a second sort of cheese is made; and afterwards even a third sort, as I was informed;—a piece of œconomy which I have not known practised in England.

With best wishes for the prosperity of the society, I remain, sir,

Your very humble servant,

BENJAMIN PRYCE.

P. S. I have kept this letter some time, in expectation of sending it in a packet to England; and now send it by the post from Naples.

ARTICLE VI.

*Extract from a General View of Agriculture, in
the County of Dorset; with Observations on the
Means of its Improvement.*

[By JOHN CLARIDGE, of Craig's-Court, London.]

And accompanied by occasional Remarks by the Editor of
this Volume.

ON SHEEP.

THE advantage derived from sheep, in the county of Dorset, is very considerable, and it is undoubtedly its greatest object as an agricultural resource; indeed, of so much real importance as to be productive of great national benefit. The number of sheep kept in the county, from the best enquiry and computation I have been able to make, amounts to upwards of 800,000; and the number sold annually and sent out of the county, amounts to upwards of 150,000. The greatest advantages are derived from them, as well from the profit upon the fleece and carcase, as from the quantity of ground manured by them, which I shall endeavour hereafter more minutely to point out.

In one particular instance the sheep-owners excel all other parts of the kingdom; which is in providing ewes to yean at a remarkably early season, in the Midland counties, which supply the metropolis with

with fat lambs.—In order to shew the principle on which this mode of grazing is carried on, I shall venture to give a detail of their process and management, as far as it has fallen under my observation.

To describe the true Dorset sheep may be difficult, as to its size and shape, but I apprehend, that if the face and nose are white, and the claws or feet without any mixture of colour, the forehead woolly, and the face long and broad, the horn round and bold, and projecting rather forward, a broad shoulder, straight back, broad loin, deep carcase and short in the leg, it is the nearest to the true description of a Dorset sheep. This attention to have the sheep without colour, is considered of material consequence by the breeders of early lambs, as they are said to be of more value for the London market, on account of the extreme delicacy of the meat.

The season for putting the most forward ewes to the ram, is the last week in April, for such as are to be sold the following autumn. And for the flock (which are to be kept) about Midsummer. The lambing-season, therefore, for the forward ewes, is about the middle of September; and they are sold about a fortnight before this time at the fairs near London, from twenty-six to thirty-two shillings each. The lambs produced from these ewes are suckled in the house, on many farms round the metropolis, which makes the house-lamb fit for

the table as early as Christmas. The other part of the flock less forward do not yean till the beginning of December, but those yield a considerable profit, by their lambs being fattened upon grass, very early in the spring, near London, and produce what is called the earliest grass-lamb. The lambs kept in the hands of the breeders are always taken from the ewes in May, and are then worth eleven or twelve shillings each. They are always shorn in this county about Midsummer, and produce from one pound to one pound and a half of wool each, and the ewes are also shorn about the same time, worth about thirteen or fourteen shillings per head; at Lambs when shorn, if for sale at the fairs in July, are one year old the animal is called a hog, and produces four or five pounds of wool, and the carcase is worth about a guinea. The second year, the sheep is a four-tooth; the fleece produces about four pounds and a half of wool, and the carcase is worth about twenty-five or twenty-six shillings. The third year the sheep is a full-mouthed wether, and produces about five pounds of wool, and is then worth thirty shillings or a guinea and a half, is seldom kept longer, but generally sold from the county. If, however, the sheep be kept well, the next year, its weight will be twenty or twenty-five pounds per quarter, and will produce thirty-six or thirty-eight shillings.

The wool produced in this county is short and fine, of a close texture, and the quality of it is highly esteemed

esteemed in the manufactory of that staple commodity called broad-cloth. It is sold here by weys or weights of thirty-one pounds standing, and the average price is ten-pence or ten-pence halfpenny per pound; lambs wool produces about an halfpenny, or a penny per pound less."

There are no ram fairs, or farmers who let out rams for hire for the season, in this county; but they are chiefly bred from the farmer's own stock, are put with the ewes at about a year and a half old, and the better sort of them are not esteemed of a higher value than three or four guineas per head.

The wether sheep are constantly folded all the year round, running over the ewe leas or downs by day, and are penned on the tillage by night; they are penned late in the evening, and let out from the fold before sunrise in the winter, and not later than six o'clock in the summer. The ewes are folded only in summer, that is, when they have no lambs.

The mode of penning sheep, indeed, varies in some parts of the county, as well as the size of the hurdle; but in general the size of the hurdle is about four feet six inches long, and three feet six inches high, made chiefly of hazle, with ten upright sticks; and fifteen dozen of them, with a like number of stakes and wriths, to confine them together, will inclose a statute acre of ground, and will contain twelve or thirteen hundred sheep therein very

commodiously. The hurdles are moved every morning; consequently the same number of sheep will manure an acre of land daily. One penning is never estimated worth less than half a guinea, or twelve shillings per acre, and two at a guinea. The hurdles are worth seven shillings and six-pence per dozen, including stakes.

The sheep are constantly attended by a shepherd the whole day, whose wages is six shillings per week, a great coat yearly, and a breakfast on a Sunday. A dog is found and maintained by the shepherd; and the master has the skins of the dead sheep.

It is a practice with many farmers in the inclosed part of Dorsetshire, to buy lambs at twelve or thirteen shillings per head, keep them two years, and sell them to butchers at twenty-five or twenty-six shillings each.

It is generally understood that the original breed of the Dorset sheep is very scarce to be met with, as most of the farmers have crossed their flocks with the breed of the Hants, Wilts, and Somersetshire sheep, which have certainly improved them, as to size; and I hav^e not observed any person more speculative as a farmer and grazier in the county, than Mr. Bridge of Wenford-Eagle, who has tried various sorts, and has now introduced Mr. Bakewell's Leicestershire breed into the county, which he thinks are quite as fine in the wool as his own, and

and those he has bred are full as large as the Leicestershire. He is aiming to produce lambs from them, as early as the home breed, and is sanguine in his belief, that the lambs will be as delicate in the grain of the meat as those which are bred from the true Dorsets. He is also of opinion, that they are full as hardy, will be supported with less fodder, and that both the wethers and ewes of this breed will fat faster than the old Dorsets. At present this is an experiment, the trial of which certainly does him great credit :* though the opinion against this project is in general unfavourable to its success.—It is supposed, that the lambs being so much larger will not retain the usual delicacy, and that it may open a new trade in other parts of England, to supply the London market with early lamb ; but on this latter point, I think, there is little to fear, as there are no water-meadows in sufficient proportion in any other part of England ; which are so well managed as in Dorsetshire, and which are so essentially necessary to the produce of the early breed of sheep.

Besides the sheep peculiar to Dorsetshire, there is another very small breed in the county, in the

* Will Mr. Bridge be so obliging as to communicate to the Bath and West of England Society, the result of his experiments on this important subject, and whatever observations of his may occur from the process ? EDITOR.

neighbourhood of Weymouth, in the isle of Portland, the isle of Purbeck, and about Wareham and Poole, which are inferior in size to Welch sheep : when fat will weigh not more than eight or nine pounds per quarter ; and the best of the ewes to yean, are not worth more than fifteen or sixteen shillings per head.*

A GENERAL AVERAGE OF THE PRODUCE OF WOOL :

<i>Wethers.</i>		<i>Ewes.</i>	.
First year, a hog,	1 $\frac{1}{2}$ lbs.	First year, a chilver	1 $\frac{1}{2}$ lb.
2d ditto, four tooth	4 $\frac{1}{2}$ lbs.	2d ditto,	3 $\frac{1}{2}$ lbs.
3d ditto,	2 lbs.	3d ditto, six tooth	5 lbs.

Upon the whole, from a due observation of the quality and number of sheep bred and kept in the county, it may be supposed, with some degree of accuracy, that the produce of wool, annually, is ninety thousand weys, or weights of thirty-one pounds each.

The number of wethers sold	50,000
The number of ewes	100,000
The number reared	450,000
And the home consumption	200,000

It is incumbent on me to take notice of a disorder peculiar to sheep, which is sometimes fatally

* Will any Dorsetshire Gentleman be pleased to point out the particular name, the supposed origin, and peculiar value, (for almost every distinction of sheep will be allowed to have some local excellence) and the nature and value of the wool ? EDITOR.

experienced

experienced in this county, called the Goggles ; it attacks them at all ages, and no remedy is at present known for it ; the first symptom is a violent itching, which is very soon succeeded by a dizziness in the head, staggering, and a weakness in the back, as if the spinal marrow was affected ; under which they sometimes languish a few weeks, and this disorder has been known to be fatal to the greatest part of a flock, and is considered as the most calamitous circumstance the sheep-owners have to dread. It is very difficult to assign the cause of this disorder ; but some of the old-fashioned farmers think that, as no such disease existed prior to the introduction of the breed from other counties, consequently its origin may be imputed to this cause ; but this is an argument perhaps of prejudice, grounded merely on conjecture, tho' I own I am inclined to give it some credit. †

† Every Gentleman of reflection, like Mr. Claridge, will have reasons for his opinion ; and it is to be wished that he had so far digressed from his style of narration, as to have given his reasons for being in the least degree of *this* opinion. The subject is important, in proportion to the destruction made in flocks by this disease ; even were it peculiar to the county of Dorset ; but the idea of its being *introduced by mixture*, implies the existence of the disease elsewhere, and indeed it is a fact too generally known by experience. Particular districts, and races of sheep, and at particular seasons, may be more subject to it than others ; but it is a disorder incident to *the animal*. That it has been so little treated on, in our best publications on Agriculture, is matter of surprise ; and this society has, for a number of years, ineffectually

HORSES, CATTLE, AND DAIRIES.

THE breed of horses in this county is not particularly attended to : a slight blood horse is made use of for the field and road, and a very ordinary style of cart-horse used in agriculture. Some cart-colts are bred in the vale of Black-moor ; and many others are brought in, either as suckers or yearlings, from other counties. Some individuals indeed have good teams, and are very careful of their horses ; but from general observation, I am persuaded the Dorsetshire farmers pay but little attention to the shape, size, or symmetry of the cart-horse. The stallions are chiefly working-horses of farmers, and cover mares, at half a guinea each, for the season ; and an average price for a cart-horse, at five years old, is sixteen or seventeen guineas.*

I was

actually offered a premium for the best account of the disease and cure. It is doubtless believed, by some sheep-farmers, that they have made some discoveries of the *most probable* cause of the goggles, and perhaps also the means of retarding its progress in a flock, if not of the means of curing the disease. Every communication on this subject, from persons who have closely attended to it, and who wish well to the publick, will be gladly received by the society. EDITOR.

* Wherever horses are used in agriculture, which (with every predilection for oxen) must be the case in some districts, it is of great importance to adapt their shape and size to the business required. It is an object worthy of much consideration. Some particular size and properties of the horse must claim a decided preference. It cannot

be

I was glad to find that oxen are often used in agriculture here; and the breed are of two kinds: those on the western side of the county are chiefly from the red ox of Devonshire, an excellent sort; † and the others in the more eastern and northern parts, are a mixture of the Hampshire and Wiltshire, with many crosses of the Oxfordshire, Gloucestershire, Shropshire, and North-country beasts.

As

be right to encourage all, or various growths, for similar purposes in similar situations: and there is so great a difference between the expense of a horse far too big and heavy, and one of sufficient size to answer the end, (whether we consider the *keeping*, the *movement*, or the *casualty* which attaches to large and costly horses) that the prejudice for *sheep* seems to require much correction. It is a known fact respecting this animal, that strength of bone and sinew is not in proportion to largeness of size; but they are found to be dense and strong as the horse approaches in fineness, even to the racer. And those farmers who have made close remarks on this subject, and have given a fair trial to the lower compact horses, not fifteen hands high, but of good symmetry, have found and must find their account in using them. Perhaps a stronger proof cannot well be urged in favour of a diminished size, than the well known capability for great labour, even of the small horses of the New Forest, when trained to waggon uses.—This is a fact which, if duly reasoned from, would remove much prejudice, and do much service to the country. One strong inducement to many capital farmers to breed and train colts of the largest size, is the demand for dray-horses in the capital, and the large prices they bring: but these inducements cannot operate generally; and perhaps, in most instances where they do operate, they influence too far for individual or general advantage. EDITOR.

† The foregoing remarks on the horse will, in some degree, apply to the Devonshire ox, as a creature for labour in agriculture.—They have confessedly the advantage over larger oxen, for expedition and continued

As the cattle are very much used in dairies in this county, very little attention is paid to the size of the beast, or to shape or colour, but if likely to make a good milker, it seems all that is necessary, and is worth from eight to ten guineas, to come into the dairy at a proper age.

The oxen chiefly fed in the county are of the Devonshire breed, and go when fat to Smithfield market, and are said to be the finest grained meat in the kingdom. These are mostly fed in the vale of Blackmoor, which extends from north to south about nineteen miles from Gillingham and Silton, to Danton and May Powder; and, from east to west, from Compton and Sutton, about fourteen miles, to North-Wotton and Long-Burton, and contains upwards of one hundred and seventy thousand acres of very rich land, chiefly grazing, dairying, and about one-tenth part in arable, with some plantations of orchards.

Through this vale runs the river Stower, which is now undergoing a great improvement, from the general act of sewers, by cutting down the sides and removing

continued labour, cheapness of keeping, and quickness of fatting.— And if there be any reason for objection against the Devonshire cow, on account of her giving less milk in proportion than others, (which objection is not allowed by some good judges) this race of females also requires more preference than seems to have been given it.

EDITOR,

removing obſtructions, which will tend to the general drainage of the country, and be a lasting improvement. Some of the land upon the ſide of this river, is rich enough for an acre and a quarter to carry a full-sized Devonshire ox through the ſummer. Most of the hay in this vale is of an excellent quality, and beasts thrive well through the winter upon it, without any other food. An average value of it to the farmer is forty ſhillings, but if fold to towns, it produces fifty ſhillings a ton. One ton of hay will keep an ox twelve weeks, allowing him one hundred weight and a half per week, which is ſufficient to laſt from Christmas to the middle of April; the profit upon the ox is eſtimated at five pounds a head each, and barren cows and heifers are reckoned to pay fifty ſhillings per head each.

There is a ſlew of cattle and ſome ſheep at Stalbridge, in this vale, every Monday fortnight thro' the year, which is the best market for fat cattle in the county, and about one hundred and twenty in number are bought and fold ne're, one market day with another.

The other cattle grazed here, are either home breds, or heifers brought from Kingwood and other Hampshire fairs, and when fat, ſupply the home-market, and ſometimes are ſent to Salisbury..

The breed of pigs in this county is not ſo good in ſhape, as either the Hampshire, Berkshire, or Hertfordshire

Hertfordshire sort ; they are of a light colour, feed to about nine or ten score on an average for bacon, and are worth about six shillings and six-pence, or seven shillings per score. As there are so many dairies, an improvement in the breed of this animal might be made by the introduction of the sorts before described.

The dairies extend all over the county, cow-calves in general are reared, and bull-calves afford a supply of veal. The management of the dairy, as every where practised in Dorsetshire, is unknown to many other parts of the kingdom. The cows are all let out by the farmer, to a dairy-man, at a fixed price for each cow, according to the quality of the land and produce of the beast : in some of the poorest parts of the county as low as fifty shillings, or three pounds per head per annum ; and in others, as high as six pounds ten shillings, or seven pounds ; and in one parish near Beaminster, called Broad-Windsor, as high as eight pounds : but I believe the general average throughout the county will be about six pounds for a cow of full growth ; four pounds for heifers, and four pounds ten shillings, or five pounds, for three years old. The usual plan for letting a dairy is this : the farmer finds the dairy-man a certain number of cows for one year, commencing at Candlemas, at a fixed sum agreed on ; he feeds, fodders, and supports the specific number throughout the year ; he finds a house for the

the dairyman and his family to live in, and allows him to keep as many pigs and poultry as he thinks proper, and the keep of a mare to carry out his butter, &c. which, by producing a foal yearly, is considered a material advantage to the dairyman, who perhaps sells it when weaned, in November, for from eight to ten pounds. If the farmer is inclined to let his dairy to another man, he gives the dairyman notice before All-Saints Day, and by custom the quarter of a year, from November to February, is deemed sufficient, and the dairyman quits the house and gives up his bargain the ensuing Candlemas. The dairies in general are managed by making all the cream into butter, and from the skimmed milk, an inferior sort of cheese, which sells from twenty-five to thirty shillings per hundred weight in the county; and the butter, which is worth from eight-pence to ten-pence per pound, is in general salted down in tubs, and supplies Portsmouth and the London markets; but there is also made a considerable quantity of the better sort of cheese, which brings a price as high as thirty-seven shillings, or two guineas per hundred weight.

The grazing, however, in many other parts of the county, cannot be rated so high as the vale of Blackmoor allows me to do, and it will be found nearer the true average upon the feeding land; that two acres will summer a beast, and that the profits no willt exceed three pounds per head. Some farmers,

mers, particularly in the neighbourhood of Dorchester, and indeed in many other places, are very choice in their cows; and I had frequent opportunities of seeing several dairies, which did great credit to the owner's taste and judgment. The partiality for the Derbyshire and Leicestershire sorts is certainly most prevalent, and the observation is just, that those cows from the North-country breed carry infinitely more flesh than the home breed, and those most sanguine in this opinion are positive that they produce quite as much milk, and of equal goodness: but of this I have my doubts, particularly as they consider seven or eight quarts at a milking, an abundant quantity, with the best keep; which is certainly much less than the produce in many other parts of England.

COMMONS AND WASTE LANDS.

OF the commons in Dorsetshire, the greater part of them, in the inclosed country, are stinted—one horse or two beasts to a lea: the horse lea is estimated worth thirty shillings, and half that sum for a beast. The lands, in general overrun with furze and ant-hills, do not in their present state return more than seven or eight shillings per acre; but most of them highly proper to cultivate, and if converted would be worth eighteen or twenty shillings an acre, as lime for manure is easily to be obtained.

The

The greatest proportion and extent of waste-lands in the county, is in its south-eastern part from below Bere-Regis; southward, towards Lulworth and the sea, extending all the way to Corfe-Castle, Wareham and Poole, from thence towards Christchurch in Hampshire, and within a small distance of Wimborn-Minster, (the greater part of which, except a few cultivated parishes which intersected it) is in its present state a most dreary waste, and almost the only advantage derived from it at this time is the support in summer of a few ordinary cattle and sheep; and the heath, which is pared up by the surrounding villagers for fuel.

The towns of Wareham and Poole, which are situated most contiguous to this uncultivated country, are of considerable consequence; the latter is by much the greatest port in the county, and to which at least two hundred sail of shipping are said to belong; an extensive trade is carried on to Newfoundland, which imports above two thousand tons of seal-oil annually, besides one thousand tons of train-oil.

There is but one road into the town of Poole, and, from the large space the tide flows over adjoining to it, the property about it is so curtailed and surrounded, that land seems wanting for the necessary convenience of the inhabitants.

A material improvement struck me, during my short visit there, which I think might be made by

throwing a draw-bridge over to the opposite neck of land, and making a quay all the way along, directly opposite to the town: this idea brought to my remembrance the situation of the port of Yarmouth in Norfolk, where, on the Suffolk side of the haven, which now belongs to Mr. Anson, member for Litchfield, and which twenty-five years ago was rented by butchers at thirty shillings an acre, it has been, by Mr. Kent, agent to the estate, divided into small parcels, and let on building leases, and is now become a perfect quay, and covered with buildings and stores of all kinds. At first sight, the borough of Great Yarmouth viewed this creation with a jealous eye; but the advantages accruing to them, in point of convenience to their trade, have been so great, that there is scarcely a merchant of eminence residing there at this time who does not hold a part of this land, and is anxious to lay out his money in buildings for the convenience of his merchandize; this has been a wonderful improvement to the owner of the fee, as it has increased his income from the price paid as before-mentioned to seven pounds an acre, and has afforded a real convenience to the trade of the town; and I have never seen any place more capable of improvement than the ground before described.

In passing over this part of this county, the soil is found extremely barren, and will certainly require long time and trouble, besides great expence,

to

to get it into a state of cultivation; but those small spots which have been inclosed and seem like encroachments from it, although in the hands of very poor people, point out how very capable the whole is of improvement: and, I am persuaded, that if the property in the vicinity of Poole, which abounds with inhabitants of great opulence and respectability, were to be parcelled out and let in small lots upon long leases, it would soon wear a face of cultivation highly profitable, and would in a few years be trebled in value, instead of being at present a mere blank, and producing no real benefit to its neighbourhood, or the community at large.

GENERAL OBSERVATIONS.

VERY few parishes in this county have of late years been inclosed; there are some, however, between Wimborn-Minster and Blandford, and in the vale of Blackmoor, which are said to answer extremely well, and to have much increased the value of the property therein; but there are no estates in the county which have increased in value so much as those about towns and villages upon the coast, which are resorted to annually by visitors for the purpose of bathing; in these places, such as Lyme, Weymouth, &c. houses have been doubled, and in many instances trebled in value. In the last twenty

years, not fewer than three hundred persons on an average are said to have visited the former place every summer, and four or five times that number the latter, which greatly increases the value of the land round these places.

Provisions, however, are plentiful; and besides a great abundance of most excellent fish, the markets are supplied in most parts of the county with beef, at four-pence per pound; mutton, at four-pence halfpenny; chicken, at fifteen-pence per couple; geese, half-a-crown each; and turkeys, at three shillings and six-pence each.

I consider the great outlines for improvement in Dorsetshire to consist in the introduction of the Norfolk husbandry, which is certainly the most productive of any arable district in the kingdom—the separation of tenures—the cultivation of waste land, and the ornamenting of it by plantations; and, I trust, under so valuable a patronage as that which it will now have, a spirit of improvement will be excited equal to its natural resources: and if in the preceding representation I have pointed out any idea which may lead to its advantage and prosperity, I shall think my labour amply compensated.



ARTICLE VI.

On the Properties and Use of Mangel-Wurzel.

[TO THE SECRETARY.]

SIR,

THE honour I have received in being elected a member of the Bath Agricultural Society, I must attribute in part to the kindness of Dr. Lettsom, to whom I have candidly reported every thing which has occurred in my endeavours to cultivate, to the best advantage, that valuable root the *Mangel-Wurzel*; his manner of introducing which marks his philanthropy so strongly, that were it possible to obliterate the series of benevolent actions which have distinguished his character, I should still feel an exultation, in having my name mentioned with his in this pursuit. I am even proud of having been called "The Muzzle-Fuzzel Knight," by some of my neighbours, who wished to place me in a ridiculous light, for having attempted in vain to enforce the use of coal-bushels in retail trade, corresponding with those by which the duty is paid. The difference of a heap on a circle $19\frac{1}{2}$ inches diameter, or on one of 16 inches, is no trifle, especially to the poor; the care of whom is, I hope, not so foreign to the views of the Bath Society, as this digression is to the culture of *Mangel-Wurzel*; my first trial of which was in the year 1788,

of which Dr. Lettsom published my report to him in the Gentleman's Magazine, for January or February 1789: it was intended only to see whether it was materially different from any of the beets to be then bought in the London seed-shops, of which there is now no doubt; but I apprehend attention to selecting proper roots to save seed from, is the great point in promoting the future cultivation of it. For partial as I am to it, if I cannot procure crops of it, which will chiefly rise above the surface of the soil, like the long pudding turnip, I shall greatly abate in my present hopes of it. I do not wonder that every body condemns it, who has only seen such as have grown with the crown close to the ground, and sent out large forked roots. This, especially in a stiff soil, must be an insurmountable objection, and may ultimately prove to be in the nature of some soils, or remediable by some mode of culture.

My crop of the year 1788, having been produced from little more than a thimble-full of seed, was chiefly distributed to persons who applied to me for roots to save seed from. In the year 1789, I sowed about an acre with seed procured from Dr. Lettsom. I kept one small hog six weeks, in a place which I passed so frequently, that I must have seen if my yardman had given it any other food; and for a fortnight before it was killed, it was fed with boiled potatoes, with the proportion of a quarter of a peck of

of barley-meal to a pail-full; and it was such meat as I was not ashamed of sending a quarter of to Dr. Lettsom, which no food could have made it in a fortnight, if it had been starved for six weeks before: but the chief of my crop I packed in a dry ditch, as I then did my potatoes, and removed them at the same time in the spring into a barn, and covered them with some straw, which kept them perfectly good, till those of the following year were large enough to begin to use. In the year 1790, I sowed at different times and places about three acres, the chief of which was sown late in May, and some in June, on light land, which had been exhausted by my predecessor; but manured by me as the rest of the shift was for turnips. The land being in an open field at the meeting of three roads, I wished to shew my neighbours that it might be fed on the ground: what was sown before the first week in May, had several plants run to seed; but nevertheless, it surprised every body to see how long it kept my cows. What was sown late acquired but little bulk, and the crown of very few of them rose from the ground. My cows certainly picked up too much dirt with these, which were fed in very wet weather; and whether from the dirt or the lusciousness of the roots, two of my cows frequently dropped down suddenly, and when they were bled, their blood was very black; nevertheless, my dairy-maid complained that the cows did

did not give so much milk when they began to eat turnips which were drawn into a clean fainfoin field. The superior sweetness of the cream and butter, when the cows are fed on Mangel-Wurzel, makes my family grudge every root which is applied to any other purpose; and the same cows were affected in the same way, after they had been at turnips six weeks. In the year 1791, I sowed about two acres on the adjoining shift in the open field, and about one acre in a home-stall inclosure.

The autumn proving dry, grass was scarce, and the situation enabling me to get a cart within reach, without driving over the roots, I found great benefit from stripping off the *fading* (not dead, nor growing) leaves, which upon many of the roots was, I think, repeated three times. One feeble old woman gathered as many in a day, as nine cows could eat in the night. If it rained in the morning, she had a girl to help her in the afternoon; and for Sundays, and when weather or other avocations prevented her, a man presently drew as many roots as answered the same purpose. These roots were larger, and of course cleaner, than the late sown ones of the preceding year; and being drawn into a clean grass field, I heard nothing of giddiness. I had about six acres of potatoes in the open field adjoining, which were at least as well manured as those of the Mangel-Wurzel: when I had packed them both in the same way, I found more than double

double the quantity of Mangel-Wurzel from the two acres (besides the drafts which had been made from them) that I had of potatoes from the six acres.

My mode of packing them, was by drawing two furrows with a plough, at four feet asunder; the mould from between which I threw to each side, to form two little banks, which stopt the cart wheels in backing, to shoot the loads alternately on each side, and a little help trimmed them into the form of a roof, which I covered with a little straw, and then with mould above a foot thick. This preserved them perfectly, except a few which were packed in a wet day, and which were mouldy on their outsides, and some few rotten. And I had the satisfaction to exhibit, to as many of my neighbours as I could collect on the 17th of April, that my cows (which had been so greedy of grass, that the boy who drove them from the turnip-piece, which they had finished that morning, could not keep them from the hedges) on being turned into a piece of fine fresh rye-grass, on which two barrows full of Mangel-Wurzel, and as many potatoes were thrown, did not eat the grass till they were both finished. My yard-man began by allowing eight cows five barrows of Mangel-Wurzel a day, weighing about 140lb. each, and no potatoes; this he found more than sufficient; and as he was desirous of all the Mangel-Wurzel he could get for the swine, (which absolutely left potatoes untouched for two days

days after they had been used to Mangel-Wurzel) he reduced the eight cows' daily allowance to two barrows-full of each, and their preference to Mangel-Wurzel was evident; they were housed in the nights, (as my cows always are till they go to grass) and had generally some of my worst hay, chiefly the stalks from which fairfoin seed had been threshed, but were racked with straw when I could spare it. The grass they ate could not be placed to much account, as the space they were folded on was less than an acre, which I increased a little at a time, as it became necessary, to give them the roots clear of their dung.

My crop of 1792, I sowed as I had done that of 1791, with Cooke's patent Drilling Machine, to enable me to hoe between the rows before the plants were large enough to single out, by which I had saved the chief of my crop of 1791; and as the seed is yet at a price to make sparing it an object, I wished to try how little would do, and used funnels of a size to receive the seed from two boxes, and sow it in drills 22 inches asunder. Having been told that the cups he had calculated for this seed were so deep and narrow, that the seeds stuck in them, I filled all the wheat cups but three, at equal distances in each box, quite full of wax, and put a patch of paper over each to keep the seed from sticking, in case the sun should soften it; and these I filled so nearly full as to leave only a semi-circular

circular edge, like the paring of a nail, to catch the seed, which I think sowed about 4lb. an acre; 3lb. equally distributed would, I think, be quite enough. Had I had a less expert workman, my crop would have been better; he had acquired great credit by the straightness of his drills in my other crops, and could not sacrifice it to my request in this: for I observed to him, that when he held the coulter beam to either side, to correct the boy's errors in leading the horse, the seeds hung in the pieces of canvas, which join the pipes to the funnels; this left some spaces unsown, and dropped too many seeds together in others. I had been advised to bury the seed a month before I used it in damp sand; but not having covered it sufficiently, I found that in a few days it was all sprouting, which obliged me to hasten my sowing it, and prevented my attention to some remarks I intended to have made upon seed from different places. The planting some to fill the vacancies occasioned by the seed sticking in the canvasses, increased the expence, placed to the account of hoeing, which the wetness of the season rendered much greater than usual, especially as I did it chiefly by women, who ran home for every shower, and staid there if they saw a cloud; and I had near two acres spoiled by not being able to get them hoed in time; yet my principal crop of three acres on a good soil, but very near the chalk, has amply repaid me even by the leaves

leaves, which I gathered only once, and fed all my cows and calves with them in an adjoining grass close, as I packed the roots, which I began to do by piling them against the back of a new-dressed fence, and covering them with mould. This I shall continue to practise for a few, to be able to get at them in a frost; but I think I have packed the rest in the cheapest and best way I am likely to find. When I had gathered all the leaves clear off from six drills, I ploughed up one of the middle ones, and returning with the plough, turned another furrow to the opposite side: this formed a trench, into which women and children threw the six rows of roots, and the plough turned the mould back over them and formed the tops of ridges, far enough asunder to let a cart go between, and from which I expect to turn the roots out by the plough as I do my potatoe crops; and should I chuse to feed them on the ground, I can do it without hurdles, by ploughing up no more at a time than I want.

Another piece, the chief of which was spoiled for want of being hoed in time, I drew the best of for my cows, and fed my calves on the ground with the rest; and one of them was taken giddy, as two cows had been in 1790. Another of my calves was affected in the same way a few days ago, which has been at turnips many weeks; which seems to wipe off the suspicion from the Mangel-Wurzel. But should the fact be proved, that its juices are too

too rich to be used too freely, it will amount to no more than saying that horses should not be fed with too much corn. As I am its sincere advocate, I wish to advance every thing I am aware of in its disfavour; and although I am persuaded that its saccharine juices are very nourishing, I think the root seems to want that pungency which strikes my palate in the rinds of turnips, and abounds in cabbages, especially the red sort, and which I conceive to be necessary to warm the stomachs of animals in the depth of winter. This seems corroborated by sprouted potatoes, which, when so rank that we cannot eat them, are found most valuable for cattle.

But a gentleman who was very partial to Mangold-Wurzel in this neighbourhood, and who is removed to a very stiff soil in Suffolk, tells me that the swine and cattle, which had been fond of it here, refused it there; and that when he tasted it, it bit his tongue like a strong radish. I admit, that I find a roughness in the leaves, which prevents my preferring it to spinach, as many people do; but this seems so far from being disagreeable to my cattle, that when they have accidentally broke their fold, they have preferred the leaves to the roots, or to turnips which have been adjoining. Many people are deterred from trying this root, upon being told it cannot be relied upon to resist a severe frost uncovered, which I do not deny, as far as they are out of the ground; but I have found all below the surface

surface perfectly sound, late in the spring, whenever frost, or hares, &c. have taken off all that was above, which led me at first to prefer those with crowns close to the ground; but this is no consideration, compared with the cleanness of those which rise above the surface, especially if they are fed on the ground, which I expect they will be, when their culture is better understood; at least, instead of such turnips as are fed off in time to sow wheat. And as far as this tends to prevent the quick return of turnip crops to the soil, it will give the succeeding ones a better chance; and their being earlier sown and hoed will contribute to employ parishioners, at a time that many want work, and prevent the great hurry and consequent high wages to strangers at the time of hoeing turnips, which often interferes with harvest. My partiality to these roots, which seem exempt from the evils of the fly, the mildew, the caterpillars, &c. may lead me to under-rate the expence of ploughing them in, and to overvalue the certainty of being able to preserve them good through the summer, if they are not wanted sooner; but almost every year's experience shews the inconvenience of being overstocked either with mouths or with turnips in the spring: and I have not found it accidental, but constant, that almost all the roots from which I have gathered the feed, remain good food for my swine: this is no great consideration, farther than that it proves they
may

may be preserved for use so late a period, by only laying them on the ground in a stack-yard, or any odd corner.

Their fattening quality has, I believe, been proved upon a large scale, . I have been convinced of it, by every thing I have given it to ; but can only speak to having killed one heifer, fattened intirely with that in the days, and hay by nights. This beast, for a particular reason, I was obliged to dry, and as soon as she was dry I tied her up, which was on the 15th of last October ; and the butcher said, whenever I killed her, he could only allow me the price of cow beef for her : he killed her on the 7th of December, and without my saying any thing to him, he allowed me 4s. 6d. a stone, (the best price of beef at the time here) the meat was so remarkably sweet, that he observed it to me as soon as he had tasted it, and when I sent for the best piece he had left to make a present of, after what was wanted for my own family had been ordered, he requested me to spare him as much as I could for his other customers : had I known sooner how good it would prove, I should have distributed more of it to my friends.

But were the whole utility of Mangel-Wurzel reduced to feeding swine, it would still be very valuable. My yardman assures me that a brawn I killed this winter, had lived wholly upon it, till within a few days of its being killed—for which time

time it had had peas; but having rooted up the pavement of his sty, he wasted so many, that I ordered him to be killed before he could have received any material benefit from the peas. I had one quarter collared for a trial, and had it been boiled enough, it would have been as good as any I ever bought. I made hams of the legs, and sold the remainder to my labourers, at half the current price of pork; and they all declared they never ate sweeter meat, and did not wish it fatter. Were it practicable to fold pigs like sheep, and compel them to deposit their dung regularly, I am convinced that feeding it on the ground by them, would enrich the land to a very high degree; although I think they exhaust the soil more than turnips, if they are not fed upon the ground; but the richness they add to the muck in the farm-yard, by the swine or cattle eating them, must be ultimately felt in the farm, although its value cannot be exactly stated.

The situation of my farm does not make it convenient to me to keep sheep, or I would have fed some with it on the ground this year. I should only fear its being too rich for ewes in lamb. I know it is very valuable for weaned lambs, at a time when in a dry summer the farmers are often distressed what to do with them.

As to the culture of Mangel-Wurzel, the best time for sowing the seed must depend upon the weather:

weather: it cannot be more precarious than that of turnips, in which it often happens, that the morning or afternoon makes the difference of a good or a bad crop. The beginning or middle of May seems the most desirable time, which is as early as convenient after barley sowing.

Such a preparation of the seed as may make it grow faster than the seeds of weeds latent in the ground, seems necessary to facilitate their first hoeing; which at best is troublesome, as the plants grow slow while young; and there are two or three seeds in every little lump, which cannot be separated till the plants are strong enough to stand against the hoe, which they will be at the second hoeing.

The most rational means of forwarding the growth of the seed seems to be to bury it too deep to vegetate, which is the state the seeds of those weeds are in, which grow as soon as they are brought within the influence of the air. For if they are sprouted before they are sown, and a few dry days should follow, they would probably perish. In this case I think it would be advisable to sow them deeper than I should otherwise wish; for I have had many young plants appear the second year, which I have attributed to the seed having been buried too deep the first. And I think the seed being near the surface, contributes to make the roots rise above ground, which now strikes me as

the purpose for which the Abbé' de Commerelle recommends " removing the mould from the roots with mattocks" (probably a kind of hoe:) this I never tried. It appears an alarming expence, but in a situation where women and children are glad of employment, might not prove tremendous, as I do not wish the plants to be left closer in the rows at the second hoeing than the drills are. I think 22 inches is the widest that Cooke's machine is calculated for; on land in good heart, I shou'd prefer two feet, as one large root is less trouble, and more profit, than many small ones.

May I be allowed to suppose that from the size of the leaves imbibing more moisture from the atmosphere, and the roots striking deeper in the ground, they are likely to draw less from the surface of the soil?

I am, Sir, your humble servant,

MORDAUNT MARTIN.

Burnham, Norfolk,

Feb. 11, 1793.



ARTICLE VII.

On the Field Culture of Potatoes.

SIR,

THE encouragement you give me to continue to communicate to you any agricultural matters which may occur, leads me to send you the inclosed little model, which (rough as it is) will convey a clearer idea of the machine it is meant to represent, than I can do by drawing.

In my endeavours (which have been more zealous than successful) to introduce the culture of potatoes into the field husbandry of this neighbourhood, my first object was to reduce the expence in procuring the crop as low as possible. In this point I have so far succeeded, as to have proved that no other instruments than the common ploughs and harrows of the country are required for preparing, cleaning, earthing up, and taking up the crop, except once hoeing between the stalks in the rows, which included (even as I have done it by paying women for time instead of measure) has cost less than my neighbours or even myself expected; but the dryness and shallow staple of the soil here is so ill-suited to the growth of them, (especially in dry seasons) that I have reluctantly abandoned the pursuit, in the course of which, I wished to invent something to raise the potatoes as generally as possi-

ble to the surface in ploughing them up. In one pursuit I think I have gained another point, for although I have buried as many potatoes as I raised by it, my ploughman was struck with its probable utility in wet land, by harrowing it with very little addition to the labour of ploughing, and without any treading upon it for that purpose.

The technical terms of the different parts of a plough of this country would probably not apply to the instruments of others; but I think you will conceive by the model, that the pin at the point keeps it from slipping backwards, and that a cross-bar of iron, which is here called the foot-pin, on which the plough-stick rests, holds this little harrow in its place, so that the teeth pass steadily through the mould as it is upon the turn, and break the clods by their own weight more effectually in this state than any machine, which must press them down, would perhaps be able to do at a future period, and could not leave the land so light as this does.

My ploughman observed that it made the plough draw a little to land; the teeth of mine were made round to avoid injuring the potatoes, but were they to be made in the form of coulters, and set with the points forwarder, I apprehend they would not only pass easier through the mould, but might be set so as to act in the nature of rudders, and contribute to keep the plough straight.

Perhaps

Perhaps I am communicating an idea, which may have been brought to much greater perfection by some machine I have never seen; I can only say it cannot be done by a cheaper, ^{*} as mine was planned and constructed in less than an hour.

I am, Sir,

Your obedient humble servant,

MORDAUNT MARTIN.

Burnham, Norfolk, March 11, 1793.

ARTICLE VIII.

On the Poor's Rates.

[TO THE SECRETARY.]

SIR,

IT is impossible to read your excellent discussion of the subject of the care of the poor, without wishing to know, and be known by the writer.

I am not likely ever to have your personal acquaintance; but the valuable institution of the post furnishes me an opportunity of another mode of conversing with you.*

Not

* The Secretary of the Bath and West of England Society, cannot comply with the requisition of the committee in bringing this letter

Not to assume any merit in what I have felt by being witness to some instances of tyranny towards miserable objects, which the laws of this free country fix to a spot as effectually as a dog is chained to his kennel; you will admit me to have some feeling on another score, which is, that a considerable portion of my little property pays near ten shillings in the pound to the poor's rate. My opportunities of information of the different plans which have been proposed to reduce it, have been very confined; but I have given my utmost attention to every conversation I have heard on the subject.

An observation from a very sensible man (the late Sir John Turner) many years ago, made a deep impression on my mind. He ridiculed the idea of the poor's rates being originally intended for the comfort of the paupers; their primary object being to fix the labourers to their parishes; and I think we must admit, that where they are enforced by interested persons, they are calculated to answer the end with a vengeance!

That the object is highly desirable, nay, absolutely necessary, I not only admit, but maintain.

letter in the arrangement for the present volume, without expressing his particular happiness that his sentiments in the last volume, on the very interesting question relative to the Poor Laws, has met the approbation of Sir Mordaunt Martin, whose correspondence and friendship he cannot but esteem both a pleasure and an honour.

But

But can it be obtained by no means but arbitrary compulsion? This has been the point to which I have directed my thoughts. How far I may have succeeded in my pursuit, you will be enabled to judge by the inclosed paper. The purport of which I communicated, in the year 1788, to a noble friend of mine, who was well pleased with it, and who, "after consulting some sensible people," thought it worth putting into the hands of Mr. Wilberforce, who was so kind as to keep it some time to shew to Mr. Pitt at his leisure; but returned it during the King's illness, without specifying any particular objection, but "that it did not upon the whole appear to Mr. Pitt proper to be adopted." My noble friend complimented me with keeping the paper, in case of a future opportunity of bringing forward any parts of it.

I have long intended to submit my scheme to the discussion of the Bath Society, my respectable friend [Dr. Lettsom] having given me his opinion that adopting it would annihilate the poor's rates in sixty years. That it must do it; ultimately, seems evident. The time must depend on the sums collected. The period of the society's publishing another volume being at a distance, and wishing to put my thoughts in the best light I could, have made me, perhaps, too tardy in sending them to you; but an unexpected opportunity has arisen of putting my scheme in a fair way of being revised by

by ministry in its present form, somewhat altered, and I hope improved, by the suggestions of different friends, and five years additional thought on the subject; but in a far less perfect state than it would have acquired, could I have first obtained the candid investigation of its defects, (which my confined experience prevents my being aware of) and the valuable additions, which I have no doubt it will acquire, should it be deemed worthy the attention of a committee of the society, which I feel truly proud of calling ours.

I am, Sir,

Your obedient servant,

MORDAUNT MARTIN.

Burnham, Norfolk, Aug. 10, 1793.

Outlines of a Scheme to alleviate the very unequal burthen of Poor's Rates, and to answer several other desirable purposes.

WHEREAS it is a common practice to take a sum of money from the father of a bastard, which contributes to lower the rates for that year, and leaves an increased permanent charge upon the parish, it is proposed to establish an office to receive these sums and all others, which it may be found expedient to allot to *an increasing fund*: Such as the penalties already directed by law, to be paid to the poor of the parish. Those inflicted by magistrates for trespasses, &c. That upon burying in any thing but woollen; to which might be added one upon being registered on becoming a parishioner, by any other

other means than birth or marriage. And an exemption to every person who should pay a halfpenny a day to it, from being removable, till they should become actually chargeable.

Were employers to be made responsible for a halfpenny a day (or more in proportion to wages) for all labourers and workmen not belonging to the parish, and liable to pay double for neglect, with a reward to informers, it would induce occupiers of land to encourage persons to become parishioners, instead of their present endeavours to depopulate the country; the effects of which were severely felt in many places by the quantity of corn spoiled, and the exorbitant wages paid in the harvest of 1792.

Payments to be made to the parish in which the master should reside, who should employ persons to work for him in others; this would avoid disputes, and be some compensation for the number of persons (useless to agriculture) who are fixed on country parishes by apprenticeship, and service, to those who pay very little to the rates.

Monthly or weekly returns to be made to the overseers of strangers employed, and the wages they earned, and the money to be paid quarterly. The capital to be vested on similar securities to the property of Wards in Chancery.

The interest to be remitted to the Clerks of the Peace, who should at the Quarter-Sessions receive the principal sums collected by the parish officers, and pay them the preceding interest due. To be disbursed under the same limitations as the poor's rates are, before any rate should be levied in the respective parishes.

The accounts to be exhibited at all vestry meetings, and to the magistrates acting for each district. Whenever it shall appear that the overseers of any parish shall have more than one year's interest in hand, such surplus to be paid to the county-rate.

And when any parish shall have contributed to the county rate for a specified number of years, such parish to be entitled to draw for a certain portion of its capital to repair the church, or be applied to any other work which should be recommended by such parishioners as should pay two-thirds of the rates, and be approved by the majority of magistrates, who should have acted a specified time for the district; should their numbers be equal, the one who should have acted longest for the district, to have the casting vote.

*Addition to Sir Mordaunt Martin's Scheme to alleviate
the Poor's Rates, &c.*

IT is a common complaint, that the lower class of people seldom save any thing in youth, to prevent their becoming burthensome to their parishes in age.

I know three instances to the contrary, within a stone's throw of my door. Two of them lent their money to neighbours, who became insolvent. The third bought cottages, and lives comfortably in one of them, as he now works constantly with me. But the last time I had no employment for him, he was many weeks (I think thirteen) without a day's work, because the farmers knew he could not claim relief from the parish, while he lived under his own roof.

In an adjoining parish (North-Creak) I am told there have been two attempts made to establish a Box Club, but from heavy charges in the outset, they have both been bankrupt.

Are not these disheartening circumstances, to men who must pinch themselves hard indeed, to save what they have so little prospect of enjoying any comfort?

Could not agents be appointed (in the first instance) by such persons as pay two-thirds of the poor's rates in every parish, (or larger district as might be found convenient) who should find sureties in proportion to the money that would pass through their hands? In receiving quarterly, such sums as each individual of the district should bring to him to be remitted to the office in London, proposed by Sir M. Martin, to alleviate the poor's rates, &c. to be invested in the name of the district in a collective fund, from all the districts in the kingdom, on similar securities to the property of Wards in Chancery? Such interest, as should be deemed by the inspectors of the office appointed by parliament a proper dividend, to be remitted, at stated periods, to the agents of each district, to pay to individuals in proportion to their capital, deducting from the whole such a poundage as should be fixed to pay them for their trouble.

The sum to be subscribed by each person at one time, not to exceed what should be limited, to prevent the wealthy crowding in large sums to gain influence, and lower the dividends to those for whose benefit the scheme is proposed.

Every person to have a power of transferring his stock, upon quitting a parish, to any other actual parishioner. And of bequeathing

queathing it at his death with as little expence as possible, and his heirs to be allowed to receive it within a limited time, with as little trouble as possible. Many lapses would probably happen, and the fractions in the interest, which would not divide to a quarter per cent. at each payment, being vested as capital for the benefit of each parish, would soon raise the interest to individuals higher than that paid for the gross sum; and no person being admitted to subscribe to the fund of any parish, in which he had not been registered as a parishioner, would contribute to fix people to parishes, and to increase the fund for the relief of the poor, &c. and when the fund of any district should amount to a certain proportion of the property, assessed to the poor's rates, then such of the contributors as should subscribe two-thirds of the money, should elect their own agent, who should find the same proportionable sureties as before. The agents of each district to make returns at stated periods, to the office in London, of the gross amount of capital, which would be called for at the following period. And the broker of the office should (under the direction of the inspectors) against that time, sell out of the publick funds, or call in such sums from securities, as should produce the highest proportion of capital, to be remitted to the agents of districts, to divide in proportion to individuals; and any remaining fractions to go to the capital of the district.

ARTICLE IX.

Remarks on Mr. Pew's Observations on the Poor's Laws.

SIR,

IN the letter inclosing my scheme to alleviate the Poor's Rates, I purposely avoided entering upon the remarks which occurred to me, in reading Mr. Pew's "Twenty Minutes Observations, &c." and your judicious preliminary and subsequent considerations.

derations. Permit me now to address you in your private capacity, and follow my pencil marks as I find them in the margin; and should I be so fortunate as to state any part of the subject, in a point of view which you may think worth communicating to the society, to request you to lay it before them.

In page 217, you say "some have held forth the necessity of large buildings. &c." I flatter myself we do not think widely different on this subject; to shew you my opinion, I inclose you a copy of an anonymous letter I sent many years ago to the Norwich newspaper, but which was never inserted.—"One inconvenience which the cottagers in the neighbourhood of these great houses experience, is, that the spinning masters find it so much easier to collect their work at them, than by going a long round for it, that they are unwilling to supply the cottagers with work. On the other hand, the horrid filth in which too many of the infirm and aged exist, in *their* miserable dwellings, in which the different ages and sexes are crowded together, is certainly a crying evil."

But miserable as it appears, it is an English proverb, which says "home is home, be it ever so homely;" and I feel a pride in being told that *home* is not expressed by one word in any language but our own: may I not hope, that in time the surplus of the increasing fund, which I recommend, may be applied to providing *more comfortable homes* for many!

In page 221, Mr. Pew says, "being too much the custom with them (ultimately certain of parish relief) to squander immediately all they get, be it little or much." I believe it will be generally admitted, that those who earn most, squander most. May not the evil be often traced to *taken-work?*
which

which people agree to, to save themselves the trouble of watching their workmen: the consequence is, the work is ill done, the workmen boast at the ale-house what they can spend in “a waste against the wall,” and make men at moderate wages discontented. On the little land I occupy, I endeavour to keep my number^r of men, as constantly as my number of horses: they must both be fed, and are both better kept always moderately employed, than hard worked at one time and idle at another. My men hoe my turnips at 9s. a week by the day. • An active farmer here tells me, his men are grumbling at earning 18s. a week by the acre, because his neighbour’s men have boasted of earning 25s. Their work, you must suppose, to be done accordingly. If my work does cost me more per acre, I know the worst of it: no man can calculate what he loses by not cleaning his ground. I am assured that one man of this town can earn 5s. a day in the spring, by cutting straw: he is an exception to the general rule, for he is a thrifty man, although I see him oftener unemployed than any other man; but notwithstanding he is an excellent workman, I never dare employ him, as I should set all my present men a grumbling, men who are now peaceable, because they rely upon me for *constant work*. I set them all to cutting hay, when the weather prevents their doing any thing else: if they do it slow at first, they generally seem to feel themselves obliged to me for my patience, and although I have met with some instances of ingratitude, I must say that in general they find out who is their true friend. If I threshed by measure, I should not have the opportunity of turning my hedgers, &c. into the barn in a frost, and they would naturally resort to the ale-house.

Hand-mills, and every invention for work which can be done in bad weather within doors, have no small merit in promoting

promoting the very desirable end of *constant employment*, which will, I believe, be generally found the most effectual means of preventing the occasion of Mr. Pew's parenthesis, ("ultimately certain of parish relief.") I admit that my plan of forming a permanent fund for each parish does not seem calculated to remove the evil Mr. Pew complains of in this parenthesis; but my plan does not propose to distribute the interest of that fund under less rigorous restrictions than the poor's rates are; and when one considers that paupers cannot be legally relieved, till the parish officers have taken their bed from under them, it is no discouragement to friendly societies, nor any great encouragement to squandering.

The use of the badge is so obvious, that it seems strange it is not oftener adopted: it was once tried in this parish, and reduced the rates considerably; but the initials happening to be the same with those of the magistrate's name, they called it his brand, and he did not persevere in it; and till the hope of gaining popularity can be expunged from the few inducements which generally engage gentlemen in the troublesome, unprofitable, and often invidious office of magistrates, perhaps this unpopular measure will not be generally enforced.

Every man I employ, but one, is as sprucely dressed on a Sunday, as I wish to see them: the exception is a man near 70, who has been remarkably expert at most kinds of work, and when I first employed him, was the only man here who could plash a hedge; he has been used to *taken-work*, and earned more than his neighbours, and retains his old custom of spending half what he earns in the week at the ale-house on Sunday; and if it has been too much to get through on that day, he would always finish the *laudable work* before he would begin any other on the Monday! Would magistrates refuse

refuse licences to ale-house-keepers who harbour such men, it might at least drive them to brewing at home, and their families would get the small beer.

My next remark is in the same page, that the chief dearth of work here, is, after barley is sown, till hay-cutting and turnip-hoeing come in; this argues in favour of sowing Mangel-Wurzel, of manuring the land for turnips, in preference to that for wheat, and of hand-hoeing drilled crops.

In page 223, Mr. Pew proposes “to compel them, if possible, to lay up something, &c.” Could it be contrived to give satisfactory security for the principal, and pay every one regularly the interest of their own savings, leaving them the power of bequeathing the capital at their death, this would secure them the attention of their kindred in old age.

In page 225, it appears that 1s. 10d. per ann. has sufficed in that instance to support the laudable institution, from which the subscriber had a claim to 6s. a week for the first six months of illness, and 3s. afterwards, with a provision for his funeral. Who can withhold his admiration of so wise a measure?—I should be happy to enter into an association of the kind, on a larger scale. Mr. Pew’s society I suppose to have been of the lower class of tradesmen, who had some pride in not applying to the club; but does it not frequently happen to clubs of mere labourers, that a heavy charge in the outset renders their fund bankrupt, to say nothing of the frequent frauds of their stewards?—And as no earthly good is without an attendant evil, I must observe the annual inconvenience I experience on the day of the anniversary dinner; on the last the care of every thing about my farm devolved upon one boy. My men did indeed come home sober; but when a number get together, the odds are against them.

The attendance upon the funerals of members is a token of respect, which has the good effect of alluring many to become subscribers; but the taking one man from a set, in a busy time, often throws a farmer back in his work, to the eventual loss of many pounds. I am the more sensible of this, by employing the parish 'clerk, whom none of the farmers will employ, because he has been so rash as to save a little money to keep him from the parish.*

In page 240, you recommend "employing in preference." Does not this lead to leaving vicious men unemployed? And is not that the surest source of evil?

In page 246, you recommend little publick breweries of small beer: are there not some difficulties about the duty? And would not adulteration creep into a brewery of that for sale in proportion, as it is thought to do in strong?

A brazier in this town lets his neighbour use his brewing vessels for leaving the grains: this enables many to brew who could not purchase vessels, and you may trust them for getting all the good they can out of the malt, which by the by is so little understood, as to leave room for a premium from the society.

Sir, your obedient servant,

MORDAUNT MARTIN.

Burnham, Norfolk, August 14, 1793.

* May not their reluctance to employing him, arise in some degree from the inconvenience of Sir Mordaunt complains of—his being frequently liable to be called from his labour?

ARTICLE VII.

*Extract from a general View of the Agriculture
of the County of WILTS; with Observations on the
Means of its Improvement; drawn up for the con-
sideration of the Board of Agriculture and Internal Im-
provement.*

[By THOMAS DAVIS, of Longleat, Wilts, Steward to the
Most Hon. the Marquis of BATH.]

GENERAL DESCRIPTION OF THE COUNTY.

THE county of Wilts is, in shape, approaching to oval, having its transverse or longest diameter nearly North and South.

It is about fifty-four miles in length, and thirty-four in greatest breadth, and contains about one thousand three hundred and seventy-two square miles, or eight hundred and seventy-eight thousand acres.

There is a very striking difference in the external appearance of the south-east and north-west sides of this county, the former being composed of a broken mass of chalk hills, which enter the county from Berkshire, Hampshire, and Dorsetshire, and terminate in an irregular line of bold breaks and disjointed masses, running from the north-east to the south-west side of the county; and the latter being chiefly composed of a rich tract of vale land,

stretching from north-east and south-west through the county, under the foot of those hills, but rising gradually north-west till it joins the high lands of Gloucestershire.

DIVISIONS OF THE COUNTY.

In speaking of this county, it is usual to separate it into two districts, viz.—South Wiltshire and North Wiltshire; and the division is generally made, by supposing an east and west line passing through the county at or near Devizes, thereby leaving *Marlborough-Downs* in *North Wiltshire*; but in treating of the county *agriculturally*, it will make a more natural division to draw an irregular line round the foot of the chalk hills, from their entrance into the north-east part of the county from Berkshire, to their south-west termination at Maiden-Bradley, thereby comprehending the whole of *Wiltshire Downs*, with their intersecting vallies and surrounding verges, under the name of “South Wiltshire,” or, perhaps more properly speaking, “South-east Wiltshire,” and calling the residue of the county “North Wiltshire,” or, more properly, “North-west Wiltshire.”

The natural appearance, as well as the agricultural application of the two parts of the county, well warrant this division into South-east and North-west

west Wiltshire, the first comprehending the chalk-hills, usually called Wiltshire Downs, whose general application is to corn-husbandry and sheep-walks; and the latter being remarkable for its rich pasture-land on the banks of the Lower Avon and the Thames, so famous for the feeding of cattle, and still more so, for the production of one of the most excellent kinds of cheese this island can boast.

As the difference in the soil, situation, and productions of the two districts is so very great, it will be necessary, after premising some general remarks on the whole county with respect to its property, to treat of them as two distinct and separate districts.

GENERAL STATE OF PROPERTY.

THE greater part of this county was, formerly, and at no very remote period, in the hands of great proprietors. Almost every manor had its resident lord, who held part of the lands in demesne, and granted out the rest by copy or lease to under-tenants, usually for three lives, renewable. A state of commonage, and particularly of open common fields, was peculiarly favourable to this tenure.

Inclosures naturally tend to its extinction.

The North-west part of Wiltshire being much better adapted to inclosures, and to subdivision of property, than the south, was inclosed first; while

the South-east or Down district, for many reasons that will hereafter be given, has undergone few inclosures, and still fewer subdivisions; and during the same period that a great deal of the property of the former district has been divided and subdivided, and gone into the hands of the many; property in the latter district has been bought up by the great landholders, and it is now in fewer hands than it was in the last century.

There are undoubtedly many exceptions to this general remark, and there is in both districts a great deal of property in mortmain, belonging to churches, colleges, schools, and other pious and public foundations, which necessarily remains in its original state; but, generally speaking, it may be said, that a great part of the North-west district of the county is possessed by small proprietors, and that by far the greatest part of the South-east district is the property of great landholders.

Reasons will hereafter be adduced to shew, that this difference is the natural effect of a number of causes, immediately resulting from the relative difference in the nature of the soil, and situation of the two districts, and which effect must have been, and undoubtedly is, uniformly produced in all parts of the kingdom where the same causes exist.

I. SOUTH-EAST DISTRICT.

THE district usually called South Wiltshire, but more properly South-east Wiltshire, comprehending that part of the county called Wiltshire Downs, is divided into two principal subdivisions, called Salisbury Plain, and Marlborough Downs, and contains in all about seven hundred and eighty square miles, or five hundred thousand acres.

The distant appearance of the whole is that of a large elevated plain, but the surface is broken into numberless inequalities, and intersected by several deep vallies, formed by brooks or rivulets chiefly rising within this district, and on which the villages, with very few exceptions, are situated.

The greatest part of the springs which rise in the part called Salisbury Plain, run southward or eastward, and joining at or near Salisbury, near the south-east corner of the county, make the river called the Wiltshire or Upper Avon. Those which rise in the part called Marlborough Downs, join near Marlborough, and make the river called the Kennet, which leaves the county at Hungerford, after receiving the streams which rise in the Bedwin Vale.

Soil. The soil of this district, though various, is in a certain degree uniform. The hills are chalk, with its usual accompaniment of flint. The land on the side of the hills, from which the flints have been

been washed, is usually a chalky loam, or, rather, a dissolved chalk, (provincially called white land) the flatter parts are generally a flinty loam, and the center of the vallies, next the rivulets, is usually a bed of broken flints, covered with the black earth washed from the hills above; and in some of these, there are veins of peat, formed by the black earth without any mixture of flints. And it necessarily follows, that those parts near the source of the rivulets where the hills are the steepest, abound mostly with the white land soil, and those near the junction of the rivulets, where the country is of course flattest, abound mostly with the flinty loam. The sides of the hills which have been the most washed, are the thinnest and weakest soil, and the level tops, which have been very little washed, or not washed at all, frequently the deepest and strongest.

But there are some very singular sand-veins, running through a large portion of this district, which deserve particular notice. One very narrow, but very fertile vein, enters the county at Mere, on the borders of Dorsetshire, and takes a north and north-east direction round the outside edge of the Downs, keeping nearly close to their foot, by way of Maiden-Bradley, Warminster, Westbury, and Lavington, towards Devizes, where it meets and unites with a much wider and still more fertile vein, coming down the Pewsey Vale from Burbage.

Another vein also enters the county from Dorsetshire, being the continuation of the sand-hill on which Shaftsbury stands, and passes through Donhead, Ansty, Swallowcliffe, Fovant, &c. under the foot of the Down, till it is stopped by the high ground in Burcomb Field. This vein is also met by another branch, or rather a ridge of sand-hills, coming from West-Knoyle by Stop-Beacon and Ridge, and joining the last-mentioned branch at or near Fovant.

There are some instances of strong clays and clayey loams on the skirts of this district, but as they make no part of the corn and sheep division of the county; and the quantity of this land is small, and its management is the same as that practised in similar soils in North-Wiltshire, it will be needless to say more of it here.

These soils, with all their consequent mixtures and variations, may be said to constitute the far greater part of this district.

Climate. The climate of Wiltshire Downs is so well known for its coldness and keenness, as to be almost proverbial. The height of the hills, and their exposure to the south-west wind, from the Bristol and British Channels; the want of inclosures in the vallies, and the draught of air that necessarily follows the rivers, undoubtedly contribute to make this district healthy both for men and cattle; but the length of the winters consequent to such

such a situation, is certainly unfavourable to many of the purposes of agriculture.

STATE OF PROPERTY.

THE regular division of the manors in this district shews that a great number of them were originally in one hand, and that their disposition was a matter of choice, and not of necessity or accident. The vallies of this district are (almost without an exception) intersected longitudinally by rivulets. The sides of these rivulets, being the most eligible situation for building, became of course crowded with houses as much as possible. These vallies, with their accompanying rivulets, (provincially called bourns) are frequently from three to five miles apart, and hills intervene between bourn and bourn. The shape of manors, therefore, necessarily became a narrow oblong. It was necessary that each manor should have water, should have meadow ground, and should have wood for fuel, (pit-coal being very little, if at all in use at that time.) The proper situation of the meadow ground was always near the river; for the wood, usually on the summit of the hills, the greatest part of them being evidently once covered with it, and many of them are still so.

The natural division of the manors of this district was therefore into long narrow strips from river

rierto wood, with a right to the use of both; and as the disposition of much the greatest part of the district is in this way, it shews, that such disposition was the work of accommodation, given by the original grantors or superior lords to the grantees or inferior holders: and as a further proof that it was so, there are numerous instances in this district, where a want of meadow, or of wood, was supplied by a grant of those necessary articles, taken out of other manors, at the distance of several miles from the manor to which they were annexed.

The influx of trade and commerce, and consequently of money, has tended to the division of property, and to the increase of the number of small freeholders in many parts of the kingdom. Lords of manors, who were inclined to dispose of their property, found they could make more of it by parcelling it out in small lots, than by selling it in entire manors. But this has been chiefly the case where land lay in the neighbourhood of great towns, and particularly where it could be applied to pasture.

In this district it has been otherwise; the small number of great towns in the south-east part of Wilts; the difficulty of raising quick fences in high and exposed situations; the inaptitude of the land to turn into pasture; and, above all, the indivisibility of the manors occasioned by their awkward shape, and the detached situation of the several pieces composing each estate; the difficulty of getting

ting rid of the common rights over the lands, and of course the impossibility of making much improvement in their value, seem to be the principal reasons that very few manors have been dismembered, and sold off among small freeholders.

The residence of so many of the principal land-owners in the county, on account of its reputed good air, and its eligibility for sporting, has also contributed in a great degree to prevent any great dismemberment of property.

STATE OF FARMS.

THE introduction of the common-field husbandry seems to have been very slow and progressive. The dispersed situation and smallness of the pieces of the common-field lands now in cultivation, evidently shew that the occupiers began with tilling a single acre, (viz. one day's work for a plough) or perhaps only half an acre, each; and that as a want of corn increased their cultivation, until they had cultivated all that was most proper for that purpose, still leaving those parts which were *less fit for the plough, or most distant from home*, in a constant state of commonage, but by mutual agreement keeping the cattle out of cultivated parts till after harvest.

This was the origin of common fields.

By

By the same kind of mutual agreement, they shut up, and in some cases inclosed, such parts of their *common pastures* which were most proper to mow for hay, dividing them into certain specific quantities, either by land-marks, or by lot, *for mowing*, and suffering the common herd of cattle to feed them again as soon as the hay was carried off, till it was time to lay them up for a new crop.

This was the origin of common meadows.

And these mutual agreements, originally founded in necessity, became, when approved by the lords, and observed for a length of time by the tenants, what are called “Custom of Manors,” constituting the very essence of the Court Baron or Manorial Court; by which both lord and tenants were, and are still bound; and of which, though the lord or his steward is the *judge*, the tenants are the *jury*, the custom of the manor equally binding both.

The reasons why so little alteration has taken place in the property of the lands in this district, has been already given, so far as it relates to the land-owners: but there must have been some reasons on the part of the occupiers, why, notwithstanding such great improvements have been made in other parts of the kingdom, by the abolition of common-field husbandry, (or, as it is called in Wiltshire, “Tenantry,”) and bringing the dispersed properties of each person into fewer pieces, freed from all rights of commonage, (or, as it is called in

in Wiltshire, putting the lands in "Severalty") so few alterations of that kind have taken place in a district abounding with intelligent, well-informed farmers, and they deserve particular consideration. For it is a fact, that though the modern improvements in husbandry cannot be adopted to any extent, in lands lying in a state of tenantry, yet a full half of the manors of this district are still subject, either wholly or in part, to the same absurd customs of commonage as they were two hundred years ago.

The present Distribution of the Lands in this District may, in general, be divided into Two Kinds:

- 1st. The farms in *severalty* (or those not subject to rights of common.) These are in general from 100l. to 300l. per annum: in some instances lower than 100l. but few so high as 400l.
 - 2d. The tenantry yard-lands (or customary tenements) which are still subject to rights of common. These are in general from 18l. to 25l. per annum; some as high as 40l. per annum; great numbers of which are still occupied singly, although consolidations of them are every day taking place.
-

ANCIENT DISTRIBUTION OF THE DISTRICT.

THE ancient distribution of the greatest part of this district was in the following way:

In

In general, there was in each manor one great farm, called the Lord's Farm, which usually had its lands in severalty, and distinct from the tenants.

The rest of the manor, called the Tenantry Part., was divided into small copyhold tenements or farms, called "Yard-Lands;" each of which was originally *nearly of equal value*, and enjoyed *equal rights* of commonage.

These tenants sent their sheep to one common flock, where they were kept by a common shepherd; and their cows and plough oxen to a common herd, where they were kept by a common herdsman.

As the necessity of a common sheep-flock still continues for the sake of manuring the common-field lands, a considerable part of these small properties, called Yard-Lands, are still occupied in their original state of commonage, although the tenure of them is in many instances changed from copyhold, some to leases for lives, some fallen into the lord's hands and lett at rack rents, and some sold off in fee, and frequently many of them occupied by one person.

The value of these yard-lands is different in different parts of this district, as is already stated, and of course the quantity of land in each varies very considerably. There are many instances where a yard-land of about 20l. per annum contains about two acres of meadow land, eighteen acres of arable, (frequently in eighteen or twenty pieces)

pieces) and a right on the common fields, common meadows, and other commonable places, for perhaps forty sheep, and as many cattle as they can winter with the fodder growing on the premises.

Inconveniences attending it.—Much of the singularity of the occupation of the lands in this district arises from its natural situation. The shape of the manors being, as was formerly explained, generally a narrow oblong, and frequently with the houses and buildings at one end, there are many instances where manors are near three miles long, and little more than half a mile wide.

The application of the land is almost uniform. The common meadows, *of which the greatest part are watered*, immediately adjoin the river: the houses and small inclosures as near to it as possible. Next follows the arable land, until the land becomes too steep or too thin to plough, and then the sheep and cow downs, and frequently the woods at the extremity of the manor, and adjoining the downs or woods of the manors in the opposite bourn.

In some instances, particularly where the bourns approach their junctions, and sometimes at the heads of the bourns, the lands belonging to each manor are partly on one side of the village, and partly on the other, whereby the occupation is rendered more convenient; but these instances are comparatively few.

The

The difficulties attending the inclosing or even laying in severalty, the commonable lands so peculiarly situated as great part of the district is, will be afterwards explained.

**GENERAL CUSTOM OF FEEDING THE COMMON-
ABLE LANDS.**

THE custom of feeding the commonable lands varies in different parts of this district, as well as the quantity of stock each commoner (or occupier of a yard-land) has a right to put; but in general it is as follows:

Sheep commons.—The common sheep down is open for the common flock during summer and autumn. The unsown field (or summer field) is open till it is all ploughed for wheat. The sheep have then only the down, till the harvest is over and the other fields are clear. They then have those fields and the down until the winter obliges the owners to give them hay. Until this period they are folded on the arable fields in a common fold: but when they begin to eat hay, every commoner finds his own fold and his own hay; the common shepherd feeding and penning the whole. When the ewes are near yeaning, the owners take them home to their inclosed meadows; and by the time all the ewes have yeanned, the water meadows are ready to take them to grass.

In

In some instances, the water meadows are common for the sheep flock; in others, they are private property.

When feeding the water meadows, the sheep are penned on the barley land; and by the time the water mead grass is eaten, and the barley sown, the summer field (especially if sown with ray-grass) is ready to receive the sheep, where they generally stay till near shear-time, and then go to the down until the stubble fields are broken, at which time (perhaps about the middle of September) they usually put the rams to the ewes. These rams are provided, and the common shepherd paid, at the joint expence of the commoners.

As in this state of commonage (where there must necessarily be a great scarcity of winter food) it is necessary to reduce this sheep stock before winter, it is customary to sell off the old ewes and the weather lambs about Michaelmas, and put out the ewe lambs to winter, either on-pasture land or turnips, in other parts of the county, and frequently in the adjacent counties.

These lambs are usually put out from the 10th of October to the 5th of April, and the price is seldom lower than 5s. and in some instances this year has been as high as 8s. for that time. And yet after this reduction of stock, the common-field farmers of this district are frequently obliged to buy hay for the rest, which they are often under the necessity of fetching from ten to fifteen miles. Cow

Cow commons.—Cow commons (called cow downs) are frequent in the undivided parts of this district, but not general. They were more general formerly than now, many of them having been, at different times, turned into sheep commons by consent of the commoners. These cow downs are usually the best and most level parts of the down lands, and are sometimes worth from 5s. to near 10s. per acre.

The common herd of cows usually begin to feed the cow downs early in May, (usually Holy-Rood Day) and finish when the fields are clear of corn. At the beginning and end of the season, they are driven to the down in the morning, and brought back in the evening; but in the heat of summer, they are only kept on the down during the night, and in the morning they are brought back into the villages, where they feed the lanes and small marshes by the river side (if such there be) till after the evening milking. When the stubble fields are open, the cows have a right to feed them jointly with the sheep and if there are common meadows (whether watered meadows or not) they have an exclusive right to feed them, till the end of the commoning season (usually St. Martin's Day, 11th November, O. S.) when the owners take them home to the straw-yards. After the cows leave the cow down to go into the stubble fields, it becomes common for the sheep flock, during all or

a certain part of the winter, when it is again laid up for the cows.

WATER MEADOWS.

THERE is, perhaps, no part of this kingdom, where the system of watering meadows is so well understood, and carried to so great perfection, as in this district. This, which is so justly called by *Mr. Kent* “the greatest and most valuable of all “improvements,” was *generally* introduced into this district in the latter end of the last, and the beginning of this century. Many of the most valuable and best-formed meadows, particularly in the *Wyley Bourn*, were made under the directions of one farmer Baverstock, of Stockton, between the year 1700, and the year 1705. And at present there is scarcely a river or brook in the district, that is not applied in some way or other to this purpose.

An imperfect scheme of watering had undoubtedly been practised before that period. Perhaps, indeed, its introduction into this district is almost coeval with that of folding sheep, with which it is intimately connected. But the *regular mode*, in which both systems are now conducted, is certainly not very ancient. Many old farmers, who have died

died within the memory of man, remembered when neither of the systems was conducted on any regular plan.

Theory of water-meadows.—The idea of watering meadows, so far as it relates to bringing the water upon the land, was taken from nature. It must have been always observed, that winter floods produced fertility, provided the water did not remain too long on the land. The idea of taking the water off the land at will, and bringing it on again at will, is the effect of art; and the knowledge of the proper time to do this, the effect of observation.

A water meadow is a hot-bed for grass. In what manner water acts upon land, so as to produce a premature vegetation, before natural vegetation begins, is a philosophical problem, which it is not a farmer's province to solve. It was sufficient for him to know that the fact was so. Observation on the effects of water so brought on, soon shewed them at what period its good effects ceased, and when it began to do mischief. This observation, therefore, regulated the time of keeping the water on the land—and as this period was different, on different kinds of land, and at different seasons of the year, it became necessary that they should have such a command of the water, as to take it off immediately, as soon as they found the state of the land required it. This, by degrees, produced that regular disposition of the water carriages and water drains,

which, in a well-laid-out meadow, bring on and carry off the water as systematically as the arteries and veins do the blood in the human body.

As water meadows are totally unknown in many parts of the kingdom, and but very partially known in others, it may not be thought improper, in an agricultural account of South-Wiltshire, to speak a little more fully on their nature and properties. If it should tend to excite the same improvement in other counties, one of the great objects of the institution of the Board of Agriculture will be answered.

Nature and properties of water meadows.—It has been already premised, that the principle of a water meadow, is the power of bringing on and carrying off the water at pleasure. And provided this great object can be accomplished, it is not material what the shape of a water-meadow is, or that the disposition of the trenches (provincially “*the works of the meadows*”) should be uniform. But as very little land can be entirely commanded by water, unless its inequalities are reduced by manual labour, it has been found convenient to adopt two different kinds of water meadows, one for land lying on declivities, and which must in general be watered from springs or small brooks, and the other for low land near rivers, to be watered from those rivers.

The first kind is called, in Wiltshire, “*catch-work meadows*,” and the latter “*flowing meadows*.”

"*dows.*" The latter are by far the most general in this district.

It is impossible to give any intelligible, written description of the mode of making these meadows. This operation must be seen to be properly understood.

Catch-work meadows described.—But to elucidate the distinction between the two kinds of meadow, and to give some idea what are the situations in which they may be introduced, it may be necessary to remark, that the "catch-work meadow"** is made by turning a spring, or small stream, along the side of a hill, and thereby watering the land between the New Cut, (or as it is provincially called, the Main Carriage) and the original water-course, which now becomes the "main drain." This is sometimes done in particular instances, merely by making the new cut level, and stopping it at the end, so that when it is full the water may run out at the side, and flood the land below it. But as the water would soon cease to run *equally* for any great length, and would wash the land out in gutters, it has been found necessary to cut small parallel trenches or carriages, at distances of twenty or thirty feet, to catch the water again, and each of these being likewise stopt at its end, lets the water

* The "catch-work meadows" are the kind that are so common on the sides of the hills in Devonshire.

water over its side, and distributes it until it is caught by the next, and so on over all the intermediate beds to the *main drain* at the bottom of the meadow, which receives the water, and carries it on to water another meadow below; or, if it can be so contrived, another part of the same meadow on a lower level.

To draw the water out of these parallel trenches or carriages, and lay the intermediate beds dry, a narrow deep drain crosses them at right angles, at about every nine or ten poles length, and leads from the main carriage at top to the main drain at the bottom of the meadow.

When this meadow is to be watered, the ends of the carriages adjoining the cross-drains are stopt with turf dug on the spot, and the water is thrown over as much of the meadow as it will *cover well* at a time, which the watermen called a “*pitch of work*; and when it is necessary to lay this pitch dry, they take out the turves, and let the water into the drains, and proceed to water another pitch.

This kind of water meadow is seldom expensive: the stream of water being usually small and manageable, few *batches* are necessary; and the land lying on a declivity, much less manual labour is required to throw the water over it regularly, and particularly *to get it off again*, than in the flowing meadows. The expence of making such a meadow is usually from three to five pounds per acre;

the

the improvement frequently from fifteen shillings an acre to at least forty. The annual expence of keeping up the works and watering the meadow, which is usually done by the acre, seldom so high, as 7s. 6d. per acre.

Flowing meadows described.—The other kind of water meadows, viz. those usually called “*Flowing Meadows*,” require much more labour and system in their formation. The land applicable to this purpose being frequently a flat morass, the first object to be considered is, how the water is to be *got off* when once brought on; and in such situations this can seldom be done, without throwing up the land in high ridges, with deep drains between them. A main carriage being then taken out of the river at a higher level, so as to command the tops of these ridges, the water is carried by small trenches, or carriages along the top of each ridge, and by means of moveable stops of earth, is thrown over on *each* side, and received in the drains below, from whence it is collected into a main drain, and carried on to water other meadows, or other parts of the same meadow below. One tier of these ridges being usually watered at once, is usually called “*a pitch of work*;” and it is usual to make the ridges thirty or forty feet wide, or, if water is abundant, perhaps sixty feet, and nine or ten poles in length, or longer, according to the strength and plenty of the water.

It is obvious from this description, that as the water in this kind of meadow is not used again and again, in *one pitch*, as in the catch meadows, that this method is only applicable to large streams, or to valleys subject to floods; and as these ridges must be formed by *manual labour*, the expence of this kind of meadow must necessarily exceed the more simple method first described: and the hatches that are necessary to manage and temper the water on rivers, must be much more expensive than those on small brooks.

The expence, therefore, of the first making such a meadow as this is, will be from twelve pounds to twenty pounds per acre, according to the difficulty of the ground, and the quantity of hatch work required; but the improvement in the value of the land by this operation is astonishing. The *abstract value* of a good meadow of this kind may fairly be called three pounds per acre; but its value, when taken as *part of a farm*, and particularly of a *sheep-breeding farm*, is almost beyond computation; and when such a meadow is once made, it may be said to be made for ever, the whole expence of keeping up the works, and watering it frequently, not exceeding five shillings per acre yearly, and the expence of the hatches, if well done at first, being a mere trifle for a number of years afterwards.

Supposed quantity of water meadows in this district.
The number of acres of land in this district, under
this

this kind of management, has been computed, and with a tolerable degree of accuracy, to be between 15 and 20,000 acres.

Indeed, it has been found so very beneficial, that very few spots of land capable of being watered, remain otherwise, unless where some *water-mill* stands in the way, or where some person who has the command of the water *above*, refuses to let it be taken out of its natural course to water the lands below.

Some new meadows might be made, and very great and beneficial alterations made in the old ones, if some plan could be adopted to get the command of water where necessary for this purpose, and particularly in the case of water mills. A remedy for this will be afterwards proposed.

Water meadows do not make a country unhealthy.— It has been alledged by those who know very little of water meadows, that they render the country unwholesome by making the water stagnant. Daily observation proves the fact to be otherwise in Wiltshire; and the reason is obvious. It has been already said, that a water meadow is a “hot-bed for grass;” the action of the water on the land excites a *fermentation*; that fermentation would certainly in time end in a *putrefaction*: but the moment putrefaction begins, vegetation ends. Every farmer knows the commencement of this putrefaction, by the scum the water leaves on the land; and

and if the water is not then instantly taken off, the grass will rot, and his meadow be spoiled for the season. The very principle of water meadows will not permit water to be stagnant in a water-mead country; it must be always kept in action to be of any service: besides, many of the best water meadows were, in their original state, a stagnant, unwholesome morass.

The draining such land, and making it so firm that the water may be taken off at will, must contribute to the healthiness of the country, instead of injuring it.

Great advantages from water meadows.—It is frequently asked how it comes to pass, that although water meadows are so useful as to be almost indispensable in South-Wiltshire, yet in other counties where they are not known, that want of them is not felt; nay, that there are even in this district many parishes which have none, and where the farmers even breed lambs without them? To this I answer, that the fair question is not, “ How do other counties do without them?” but “ how could the farmers of this district, who are happy enough to have water meadows, pursue their present system of sheep-breeding, if those meadows were taken away?”—a system which I do not hesitate to say, is more profitable to themselves, their landlords, and the community at large, than any other that could be substituted in its room; and perhaps this question cannot

cannot be answered better, than by exhibiting the contrast between those who have water meadows, and those who have none, in the same district.

Every farmer who keeps a flock of sheep, and particularly a breeding flock, in so cold and late-springing a district as South-Wilts, knows and feels the consequences of the month of April. “ That month *between bay and grass*, in which he who has not water meadow for his ewes and lambs, frequently has *nothing!*” The ewes will bring a very good lamb with hay only; perhaps a few turnips are preserved for the lambs, which, in a very favourable season, may last them through March; but if they are then obliged to go to hay again, the ewes shrink their milk, the lambs “ pitch and get stunted,” and the best summer food will not recover them. To prevent this, recourse is had to feeding the grafts of those dry meadows that are intended for hay, the young clovers, and frequently the young wheat; in fact, every thing that is green.—And who will pretend to estimate, what is the loss that a farmer suffers by this expedient?

Management of water meadows.—The management of water meadows (as nearly as it can be described in an account necessarily so concise as this) is in the following way:

As soon as the after-grass is eaten off as bare as can be, the manager of the mead (provincially “ the drowner”) begins cleaning out the main drain, then

then the main carriage, and then proceeds to "right up the works," that is, to make good all the water carriages that the cattle have trodden down, and open all the drains they may have trodden in, so as to have one tier or pitch of work ready for "drowning," and which is then put under water (if water be plenty enough) during the time the drowner is righting up the next pitch. In the flowing meadows this work is, or ought to be, done early enough in the autumn, to have the whole mead ready to catch, if possible, "*the first floods after Michaelmas*," the water being then "thick and good," being the *first* washing of the arable land on the sides of the chalk hills, as well as of the dirt from the roads, &c.

The length of this autumn watering cannot always be determined, as it depends on situations and circumstances; but if water can be commanded in plenty, the rule is to give it a "thorough good soaking" at first, perhaps a fortnight or three weeks, with a dry interval of a day or two, and sometimes two fortnights, with a dry interval of a week, and then the works are made as dry as possible, to encourage the growth of the grass. This first soaking is to make the land sink and pitch close together; a circumstance of great consequence, not only to the *quantity* but to the *quality* of the grass, and particularly to encourage the shooting of the new roots which the grass is continually forming, to support the forced growth above.

While the grass grows freely, a fresh watering is not wanted, but as soon as it flags, the watering may be repeated for a few days at a time, whenever there is an opportunity of getting water, always keeping this fundamental rule in view, “*to make the meadows as dry as possible between every watering;*” and to “*stop the water the moment the appearance of any scum on the land shews that it has already had water enough.*”

Some meadows that will bear the water *three weeks* in October, November, or December, will, perhaps, not bear it *a week* in February or March, and sometimes scarcely *two days* in April or May.

In the catch meadows watered by springs, the great object is to keep the “works of them” as dry as possible between the intervals of watering; and as such situations are seldom affected by floods, and generally have too little water, care is necessary to make the most of the water by catching and re-using it as often as possible; and as the *top works* of every tier or pitch will be liable to get more of the water than those lower down, care should be taken to give it to the latter a *longer time*, so as to make them as equal as possible. .

Custom of feeding meadows with sheep.—It has already been said, that the great object in this district of an early crop of water meadow grass, is to enable the farmer to breed early lambs.

As soon as the lambs are able to travel with the ewes, (perhaps about the middle of March) they begin to feed the water meadows. Care is, or ought to be taken, to make the meadows as dry as possible for some days before the sheep are let in.

The grass is hurdled *out daily* in portions, according to what the number of sheep can eat in a day, to prevent their trampling the rest; at the same time, leaving a few open spaces in the hurdles for the lambs to get through, and feed forward in the fresh grass. One acre of *good grass* will be sufficient for five hundred couples for a day.

On account of the quickness of this grass, it is not usual to allow the ewes and lambs to go into it with empty bellies, nor before the dew is off in the morning.

The hours of feeding are usually from ten or eleven o'clock in the morning to about four or five in the evening, when the sheep are driven to fold; the fold being generally at that time of the year (as has been mentioned before) on the barley fallow. And the great object is to have water-mead grass, sufficient for the ewes, and lambs, till the barley sowing is ended.

Meadows laid up for hay.—As soon as this first crop of grass is eaten off by the ewes and lambs, the water is immediately thrown over the meadows, (at this time of the year two or three days over “each pitch” is generally sufficient) and it is then

then made perfectly dry, and laid up for a hay crop. Six weeks are usually sufficient for the growth of the crop. It seldom requires eight; and there have been instances of great crops being produced in five.

Nature of water meadow hay.—The hay of water meadows, being frequently large and coarse in its nature, it is necessary to cut it young; and if made well, it then becomes of a peculiarly nourishing milky quality, either for ewes or dairy cows.

The water meadows are laid up for a second crop, in *some instances*; but this is only usual when hay is scarce: not that it is supposed to hurt the land, but the hay is of that herbaceous soft nature, and takes so long time in drying, that it is seldom well made. It is usually of much greater value to be fed with dairy cows. And for that purpose a flush of after-grass, so early and so rank, will be precisely of the same comparative service to the dairy, as the spring feed has been described to be for ewes and lambs.

The cows remain in the meadows till the *drowner* begins to prepare for the winter watering.

Water meadows safe for sheep in spring, but will rot them in autumn.—Water meadows are reckoned to be perfectly safe for sheep in the spring, even upon land that would rot sheep if it were not watered, but in the autumn the best water meadows are supposed to be dangerous. This is at present an inexplicability

explicability in the operations of nature, and a discovery of the reason might perhaps lead, in some measure, to a discovery of the causes of the rot in sheep. But the circumstance itself is rather an advantage, than a disadvantage, to this district, as it obliges the farmers to keep a few *dairy cows* to feed the water meadows in autumn, and to provide artificial grasses, or other green crops for their sheep, during that period.

Proper soils for water meadows.—From what has been so repeatedly urged, on the necessity of making water meadows *dry*, as well as *wet*, every reader must have inferred the advantage of having them, if possible, on “*a warm absorbent bottom.*”*

The bottom or sub-soil of a water mead, is of much more consequence than the quality or the depth of the top soil.

Not but that land on peaty or clay bottoms may be considerably improved by watering; and there are many good water meadows on such soils, but they are not so desirable on account of the difficulty of draining the water out of them, and making them firm enough to bear treading.

* There is a striking proof of the truth of this remark, in the water meadows near Hungerford, and particularly at Standen. Although they are laid out in no regular plan, and in many instances there are no drains to empty the water carriages, yet the gravel bottom is so very absorbent, that the water will soak out in a few hours, and the meadows be left as dry as if they were watered on the most systematic plan. And few meads in the county produce better crops either of spring feed or of hay.

A loose gravel, or what, perhaps, is still better, a bed of broken flints; with little or no intermixture of earth, wherever it can be obtained, is the most desirable bottom.

On many of the best water-meadows in this district, where the bottom is a warm, absorbent gravel, or rather a bed of broken flints; the soil is not six inches deep, and that depth is quite sufficient, in those seasons when water is plenty, as the grass will root in the warm gravel in preference to the best top-soil whatever, and such meadows always produce the earliest grass in the spring. Nor is it so very material, of what *kinds of grasses* the herbage is composed, when the meadow is made. *That kind* will always predominate, which *agrees best with the soil and the water*, provided the supply of water be regular and constant *every winter*, otherwise *that kind* will predominate which will bear *wet and dry*, and some of the worst grasses, in their native state, will become the best when made succulent by plenty of water.

[Note. Here follows a copious Dissertation on the Culture of ARABLE LANDS in this district, which it would be acceptable to many readers to have inserted; but our limits forbid a complete insertion in this place, and an abridgment would be difficult without doing injustice to the skill and connexion of the very ingenious author.]

COMPARISON BETWEEN DRILL-HUSBANDRY
AND BROAD-CAST.

It is not for me to decide on a subject, on which both the best writers and the best farmers in the kingdom, have so long been divided in opinion; viz. "Whether the drill-husbandry is or is not superior to the broad-cast?" They have both, undoubtedly, their merits, or neither of them would have been so long, and so ably defended. Different soils and situations require different management. Why may not some be particularly adapted to one kind of husbandry, and some to the other? What are the Wiltshire drag ploughs, but imperfect drill ploughs? And if the drag ploughs have been found, by thirty years experience in the Wiltshire downs, to have insured good stout clean crops of wheat, surely the application of a drill-box to the *very same instrument*, so as to deposit all the corn at *one depth*, must be an improvement. So much for the down land. As for the sand land, the greatest enemies of drill-ploughs allow their use in land in which the seeds of all weeds being sure to vegetate, repeated hoeings are necessary to prevent their choking the corn. If there be any who doubt it, the sand veins of Wiltshire will convince them; but they must come soon. In seven years time, or less, if the land can be put into severalty, they will, in all probability, scarcely find a *broad-cast sand-farmer in the county.*

Perhaps

Perhaps *strong clays* may furnish objections to drilling, and particularly to *drilling wheat*. Undoubtedly, the reasons given for drilling upon Wiltshire hills do not apply to land of this description; nor does such land require *hoeing*, like the sandy soils. But it ought to be considered, that *nature* supplies the use of the drill-plough in strong clays, especially under their favourite crop—*wheat*. The clods, at the time of sowing, are a gage to determine the proper depth of every wheat corn; and the pulverization of those clods by the winter frosts and the March winds, is the *hoeing of nature*, instead of that of *art*; and as in such soils the weeds are too few, and grow too slow, to do any mischief, no other hoeing is in general wanted.

It may be said that time and experience will one day decide this argument; but reason must also be called in to determine how far the *influence of particular seasons* may affect experiments in *particular years*. It is this influence, and not want of observation in farmers, that has hitherto prevented, and will always prevent, agriculture from being reduced to *one general invariable system*. “What is right one year, and even for years together, may another year be wrong;” and that farmer who happens to suffer severely by pursuing a *right system* in a *wrong year*, is shy of it for ever after; especially if he has suffered by deviating from any old mode, to which a popular opinion has been long attached.

In this case, he not only suffers the loss of his property, but is sure to be laughed at by all his neighbours, and even by his own labourers.

In many of the light lands, where ploughing is very little required, unless to destroy the weeds, Mr. Cooke's instrument, called a scuffer, which will clean five or six acres of land per day, has been used with great success, and particularly preparatory to drilling. But this instrument is not yet enough known, to be in general use.

As to the proper depth of ploughing, Wiltshire farmers are particularly cautious not to plough *below the top soil*. Wherever there is a vein of rubbly chalk, or small broken flints, immediately under the top soil, they look upon them to be literally "the dross of the land;" and that, if they are ploughed up, they are "poison." Many instances are shewn, where land of this kind ploughed too deep (frequently single acres in large tenantry fields) upwards of twenty years ago, has not yet recovered its former goodness. And to preserve this top soil as *deep* as possible, the best farmers will not permit the *surface flints* to be picked off for the roads, for fear of making the land both lighter and thinner. But in the *sand* veins, where there is a great depth of top soil, especially about Lavington, it is not uncommon to plough very deep; and frequently have a second plough following in the furrow of the first, so as to throw up *new* soil, and bury that which is supposed to be exhausted.

CATTLE USED IN PLOUGHING.

OXEN are not in general use in this district; and in some parts of it, perhaps, not so much as formerly, when there were more common cow-downs; and it is very probable, that the gradual decrease of cow-downs, which will be the consequence of the lands being put into severalty, will tend gradually to reduce the use of oxen, especially in the hilly parts of this district. And although those downs might, in many cases, be much more profitably applied to the keeping of working oxen than cows; yet, if the present rage for *fine* sheep continues, every other kind of stock must give way to them, and as soon as the cows are driven off the downs, the oxen must immediately follow.

In the said veins, where the land runs kindly to pasture, the putting the common-fields in severalty will, perhaps, have the contrary effect. It is not that the arguments, which have been so often and so successfully used on the *comparative advantages* of using oxen instead of horses, are not known, or not understood, in Wiltshire. There are local reasons peculiar to many parts of this district, which will prevent oxen from coming into general use. The first and principal is, the present *scarcity of inclosed pasture land*, and the inaptitude of a large portion of the soil of the district to make more. The next is, the peculiar *difficulty* of using them on the

the *public roads*, on account of the distance of many farms from a market, the steepness of the hills, and the flintiness of the roads. This last reason necessarily obliging every farmer, who carries corn to market, to keep at *least six horses*, the use of oxen is, in a great measure, superseded among the *small farmers*; and the large ones are, unfortunately, not only in Wiltshire, but in most other counties, too fond of *large fine horses*, and their men too fond of shewing them, to give them up readily for oxen. There are, however, some exceptions to this remark. Some of the most intelligent farmers persevere in the use of oxen, and find them (especially since they have exchanged the yoke for the collar) to answer a very good purpose. As a shifting stock, where a farmer wants more strength at one time of the year than another, oxen are peculiarly proper, being more easily bought and sold, and that at a less loss or risque than horses. And where a farmer has a quantity of rough down land, I am clearly of opinion, that the treading of a few oxen will increase the sheep-feed more than their eating will diminish it. I. have seen so many instances of downs decreasing in goodness, when changed from cow-downs to sheep-downs, as to convince me fully of this fact.

REMARKS ON INCLOSING COMMONABLE LANDS.

IT has been already remarked, and the assertion is founded on an accurate enquiry and observation, that at this time the greatest part of the parishes in this district are wholly, or partly, in a common-field state. Reasons have also been given, why it has so long remained in that state, on account of the peculiar shape and situation of a great number of manors, and the local difficulties attending a division. And these reasons have hitherto operated to preserve many of them in that state, though proposals are daily made for a division.

Many advantages, it is certain, have been derived from inclosures already made; and it may be proper now to state the probable advantages to be expected from inclosing, or at least dividing, and putting in severalty, those lands now in a state of commonage, with the most practical means of obviating such disadvantages as will necessarily arise from a new order of things, in a country less favourable than many others to improvements of this kind.

Disadvantages of the Common Field Husbandry.

The peculiar disadvantages, attending the common-field state of husbandry in this district, have already been said to be, the obligation of ploughing and cropping *all kinds of soil* alike; the almost total

total preclusion that a common flock makes to any improvement of sheep stock, the difficulty, and in some instances, the impossibility of raising sufficient hay or green winter food for the stock; and particularly the very great expence and trouble, and the additional number of horses necessary, in occupying lands in detached and dispersed situations.

Advantages to be derived from its Abolition.

The advantages to be necessarily derived from an abolition of these impediments to good husbandry, need not be enlarged upon; they speak for themselves: but it must be remarked, that, in many parts of this district, these advantages apply much more forcibly to the case of the great farmer, than of the small one.

It has been already remarked, that the commonable lands of this district consist usually of three or four arable fields, a common sheep-down, sometimes a common cow-down, and in some instances, a common meadow. The custom of a division has been, to give every land-owner an allotment of arable land in one or more of the fields, a sheep-down as near the arable land as possible, and a portion of the common meadows, if there are any. But of these, it is seldom thought necessary to inclose any but the common meadows, and perhaps a small part of the arable near home.

The farmer of one hundred and fifty, or two hundred pounds a year, will, perhaps, be able, in consequence of having his land put in large pieces, to reduce his number of horses *one-third*; he will be able to sow clover, sainfoin, &c. for hay, and raise turnips and rape for winter food for his sheep; of course he will not only be enabled to increase his flock, but to winter them at home; and though, by this mode of husbandry, he must reduce his number of *acres* of corn, yet he will, by his additional number of sheep, be able to dung his land so much better, that he will raise *more grain* than he did before.

Not so with the occupier of twenty pounds a year upon Wiltshire downs. He will certainly have the conveniency of having his land brought together in *fewer pieces*. But as it seldom happens, that he could plough his land with fewer than three horses before such a division, neither can he now do with less. He has no inclosed pasture to put these horses in, nor common to turn them out. His right on *the downs* being too small to make it worth his while to take an allotment for a sheep-down, (of perhaps *twenty acres*, two miles from home) he takes an increase to his arable land in the fields near home in lieu of it. But now he can keep *no sheep* on this allotment, nor would it be worth his while to employ a *shepherd* for *so few*, if he could. *Without sheep* he cannot dung his land, because having

little

little pasture land, and no cow commons, he can keep no cows to make dung with his straw; and the arable land being in general so little adapted to turn to grafts, he is prevented from inclosing his allotment, and laying it down to pasture.

It may be answered, that the peculiar locality of great part of this district is such, that it was not calculated for the separate occupation of farms of twenty pounds a year; and that, though the owner of such a one cannot live upon it, when put in a state of severalty, and is really injured, provided he occupies it himself, yet he may let it for one-third more than he could when it was in a state of tenantry.

I allow this argument in its full force; and if it were now required to colonize a parish in South-Wilts, it would not be prudent to make the division of farms so low as twenty, or even forty pounds per annum. But men of this description are already here; they are settled on the spot; it is in many instances their own. Justice will not let them be dispossessed without their consent. Policy and humanity forbid they should be injured, even with their consent.

These difficulties are all obviated in those where there are veins of sand land. There the little farmer has really the advantage of the great one; provided the allotment of the former is placed, as it ought to be, in that kind of land, and this should be

be the first object in all inclosures, where there is land of that description.

Great part of the *sand land* in this district is peculiarly applicable to all the purposes of a *small farmer*, or, as it perhaps may be better termed, a *garden farmer*.

As quickset hedges will grow well upon it, it may easily be inclosed, and it will, if required, turn readily *to pasture*, so that cows may be kept on one part to make dung for the rest.

If *sheep folding* be necessary, crops of clover for hay, and of turnips for winter food, may be raised, on which *sheep* from the down farmers may always be taken in *to winter*; and with proper manure, such land will bear perpetual crops of almost any kind of corn that may be required. And such land is peculiarly applicable to the culture of *potatoes*, *pease*, and such other crops as are the particular province of a *small farmer*, and in which he may, if he please, use the spade instead of the plough.

These ideas are *not chimerical*, they are already carried into practice in several sand parishes, that have been lately inclosed in this district: and the improvement, in many instances, has been almost inconceivable.

But in those parts of the district where there are no sand veins, it is, as has been already stated, difficult to *mend* the situation of the little farmers by a general inclosure. There is a mode, whereby they may

may at least be secured from being injured, and this has been adopted in some late inclosures, by setting out the allotments of arable land, to men of that description, *adjoining to each other*, in one or more of the fields, and directing the same to remain still in *an uninclosed state*, with a *common right* of sheep feed for each person *over the whole*, and with a *common allotment of down land*, and another of *water meadow*, if it be to be had conveniently, and some inclosed pasture to each if possible. Under these circumstances, men of small property will be enabled, after an inclosure, to keep a common flock of sheep, and a common shepherd to attend them as they do now, and they will, in some degree, *better* their situation, because their land will be laid in large pieces; and as *the rules* by which they are to inter-common will be settled by the authority of the commissioners of the inclosure, they will not be liable to be trespassed and injured by each other, or by their more opulent neighbours.

Notwithstanding some little sacrifices may be thus made, to the interest and comfort of the small farmers, in an inclosure of the commonable fields, and other commonable lands of a manor, by laying their allotments near home, or in soils and situations the most adapted to their occupation; it is very easy to prove, that the great farmers will still be very considerably benefited, as well as accommodated. Although, on account of the oblong shape

shape of a great part of the manor in this district, the great farmers will be perhaps obliged to take a great part of their arable land at some distance from home, yet it will have the additional advantage of being near its *natural dunghill*, the sheep-down: and as such land will of course be valued low on account of its distance, the owners will be enabled to bear the expence of removing barns to it; and in effect, “ bring the land near home,” by reducing the trouble and expence of carrying the dung out, and the corn home.

PARING AND BURNING.

PARING and burning land is not in general use in this district of Wiltshire, in preparing old arable land for a crop, but is frequently, indeed almost universally used, in breaking up new down lands; and as the use of this practice is defended by many, as not only the cheapest, but as the best way of preparing such lands for the plough, and by others totally condemned, on the maxim often quoted in this district, that “ however good this husbandry ‘may be for fathers, it is ruin to sons:’” it is an object of very great consequence, to endeavour to find out where the truth lies between these two positive assertions, by first enquiring whether *this mode of husbandry be in itself good*; and next; *whether it be proper for the purpose for which it is used in this district.*

And,

And, perhaps, no one object under enquiry, in the agriculture of South-Wiltshire, will be thought of so much real consequence by the landholders thereof.

Paring and burning land, or, as it is called in Wiltshire, "burnbeaking," though by some supposed to be a new mode of husbandry, is perhaps, *coeval* with, if not *more ancient* than ploughing. When land was to be reclaimed from a state of wood land, as great part of this island undoubtedly originally was, *manual labour* was alone applicable to the purpose.

The wood was cut off, the principal parts of the roots grubbed, and then the rough grass and moss, and the whole surface of the land, were chopped up with a curved cutting mattock, and burnt to ashes, and thus the land was prepared for sowing. This mattock was called a *beak*, and the operation was therefore, and is still frequently, called "*beaking and burning*." Perhaps no method could be better suited to the original purpose of cleaning rough, incumbered land, in which it was almost impossible for horses or oxen to work a plough, than this operation of beaking. And the action of the fire not only consumed the roots and weeds, and other incumbrances, but corrected the acidity of the soil, and rendered it fit for the production of corn. The operation not only answering the purpose of cleaning the land *better and cheaper* than it could have

have been done by the plough, but serving as manure for several successive crops.

But, unfortunately, this custom, like many others originally good, has, in some instances, remained, after its original causes have ceased to exist, and in others is applied under circumstances for which it was never intended.

Paring and burning may be called a powerful medicine, which is only proper when properly applied, but which in improper cases may do, and sometimes has done mischief, almost irremediable.

To apply this remark to Wiltshire downs, it is proper, though it has been already noticed, to repeat here, that the native soil of the downs may in general, though with some exceptions, be reduced to two distinct kinds. "The red land," and "the black land," the former being usually a *deep, strong, before, firm soil*, with an intermixture of flint, and a bed of chalk immediately under; and the latter a *loose, black surface*, of the nature of peat on a bed of flints, or rubbly chalk, and the chalk rock at some distance beneath. The former of these soils lies generally on the tops of the hills, and great part of it was originally in a state of wood-land. At this time it is, in general, encumbered with furze and stunted thorn bushes. The latter usually occupies the vallies and the sides of the hills, and though often shallow in soil, is usually the sweetest feeding part of the downs. In many instances, it

is incumbered with a *short blinking heath*; but this production of heath is much oftener the effect of its not having been "hard enough stocked with "sheep," than of any particular poverty in the land. It being a well-known fact, that many downs that were "sweet and good" within the memory of man, are now, in consequence of this kind of neglect, entirely covered with heath. Great quantities of both these kinds of land have been broken up within the memory of man, and almost all brought into cultivation by the same means, viz. "Burnbeaking," and the immediate effects have been nearly the same, viz. that of producing several successive crops, without any other kind of manure; but the duration of these effects has been very different. The red land, *with proper after-management*, being capable of being *kept* in tillage, and thereby considerably improved in value; and the black having been reduced, (after the heat of the fire has been exhausted) by two or three crops, to a mere bed of dust, *without tenacity or cohesion*, and entirely unfit for the vegetation of corn or grass for a long series of years; the fire having apparently the same effect upon it, as spirituous liquors on the human body; viz.—that of creating false, unnatural, and forced exertions, which the frame cannot long support, and eventually ruining the constitution.

It seems therefore fair to say, under these circumstances, that the black land ought by no means

to

to be burnbeaked; and it might perhaps be equally easy to prove, that such land ought not to be broken up at all. These ideas, respecting the nature of the soil of the Wiltshire downs, have been digested from a long acquaintance with, and observation of them; and if they are rightly taken up, the following general rules may be deduced from them.

No down land should be broken up, but *such as will bear corn for a continuance*, after the stimulus excited by the first burnbeaking is subsided.

No down land will bear corn *for a continuance*, unless it be manured with some *permanent alterative manure*, and there is no such manure to be had on Wiltshire downs but *chalk*.

The red land will in general bear chalking. The black land seldom or never will.

The red land therefore, provided its texture be *strong, cohesive, and sour*, and particularly if it be deep in its staple, and incumbered with strong bushes or furze, may in general be broken up; and provided such land is intended to be properly chalked afterwards, no great harm can be done by burnbeaking it previous to the first crop, provided the surface be pared thin, and as little of the earth burnt as possible. Perhaps it is not only the cheapest, but the best way of bringing it into tillage.

The black land should by no means be broken. It is always too light, and generally too thin, for a state of tillage. Chalk has apparently no effect upon

it, and if it has, it is to make it lighter. This kind of down land is, as has been already observed, in general the sweetest pasture, and even the appearance of heath upon it does not indicate that it would not be so, if it were properly stocked and close fed.

But however burnbeaking may be *proper* in *proper cases*, for breaking up new land, it is a matter of very serious consideration, how far the system of burnbeaking lately introduced, and which seems to gain ground as a *general system*, upon *old arable land* on Wiltshire downs, can be reconciled to the rules of good husbandry.

This system seems to have a tendency to subvert the long-established husbandry of Wiltshire—the *sheep-fold*, and to introduce a system, which, however proper it may be in some parts of the kingdom, is not at all applicable to this district, and appears to carry with it the seeds of its own destruction.

The general fault of the soil, of a great part of Wiltshire down land, is, that it is already “too light and too thin.” The sheep-fold is particularly adapted to remedy this fault, by adding to the cohesion of the land. If this system be right on such land, a continuance of burnbeaking must be wrong.

In my opinion, this system originates in “that pride or vanity of sheep stock,” which has been so often mentioned, and which has already been fatal to a neighbouring county, [Hants] and is doing mischief to the hills of Gloucestershire.

BENEFICIAL PRACTICES.

THE only practices in the husbandry of this district, that are likely to be of service elsewhere, are those which will apply to *similar soils and situations in other districts under worse management*: or, in other words, if there are any practices, which are the means of enabling tenants to raise a greater amount of valuable produce in *this* district, than tenants can do on similar soils and situations in *another* district, under a *different management*, those practices should be introduced into the latter.

It is a fact, that the hills of Wiltshire are rented *remarkably high*, when compared with the high lands of Hampshire, Dorsetshire, and Gloucestershire, even in those parts of the county that are not immediately affected by markets.

Those counties were *once* under the same general kind of management as Wilts, with respect to the sheep-fold; and even in many parts of Hampshire and Dorsetshire, there are water-meadows equally good with those of Wiltshire.

It remains then to be enquired, what are the customs *once* possessed by all these counties, but which Wiltshire *alone* has retained?

Use of the sheep-fold.—This custom appears to be “the use of the sheep-fold;” and that *not merely to keep the sheep from running away in the night, but with a view to manure the land.*

The “pride of sheep stock,” which must inevitably tend to the subversion of the sheep-fold,

infected those counties *first*. It is already gone *too far* in Wiltshire; and those who have attempted to stem the torrent of 'fashion, by introducing the South-Down sheep, deserve the thanks of the land-owners of the county.

Overploughing and understocking, in high exposed situations, and particularly where the land is light and loose, must always produce bad effects; and these are the natural consequences of keeping flocks of sheep for *beauty*, in countries where they ought to be kept entirely for *use*.

Use of water-meadows.—The water-meadows of Wiltshire, and the neighbouring counties, are a branch of husbandry that can never be too much recommended.

In speaking of water-meadows, it has been often objected, that they are local; and that there are many parts of the kingdom in which they neither *can be made*, nor are they *necessary if they could be made*.

There are, undoubtedly, *many parts* of the kingdom in which water-meadows *cannot be made*; but nobody will deny, but that there are *thousands of situations* where they could be made, in which they *have never been tried*. And as for their use, it may be strongly suspected, that those who deny it have never been in Wiltshire *in the month of April*. Let those who call it in question point out a substitute on which a farmer can, with *equal certainty*, depend for the sustenance of his flock in that *trying month*.

Whatever

Whatever may be the earliness of the season, with respect to the springing of either ray-grass or meadow-grass, water-meadows will be a month before either.

And notwithstanding the great advantages that have been derived from the introduction of green winter crops, such as turnips, rape, cabbages, &c. (*advantages to this kingdom almost beyond estimate*) yet this may be laid down as a certain maxim, that, whether the winter be hard or mild—whether the spring be late or early—nature will always have, in this climate, an “*interregnum*” between the end of one year’s food and the beginning of another. The same temperature of the air in the spring, which brings on the grass, will occasion all the green winter crops to run to seed, and not only to lose their own nourishing quality, but to exhaust the land on which they grow.

A moment’s reflection will convince every man, that nature must unavoidably and constantly leave this *chasm* in the year’s food. *Winter*, though driven into a small compass, is still winter, and art alone can expunge it from the *kalendar*. *Hot-houses and hot-beds* have, in a great measure, done this for the *gardener*. *Water-meadows*, which are “*hot-beds for grass*,” will as effectually do it for the *farmer*.

How necessary, therefore, is it, to impress the value of this branch of husbandry on the minds of all the land-owners in the kingdom,

It is not only the most *valuable*, but the most *permanent* of all improvements in husbandry. It not only improves the land *on which it is made*, but makes *all the adjoining land* better by its produce; and it differs in one very material respect, from *all other* improvements that a landlord can make for a tenant; that is to say, *that time will even make it better, and that the carelessness of a tenant cannot make it much worse.*

IMPROVEMENTS SUGGESTED.

THE apparent errors in the stock and husbandry of South-Wiltshire have been so often mentioned in the course of the foregoing observations, that it is unnecessary to repeat, at length, the arguments that have been used to prove that they *really are "errors."* A brief recital of them will be sufficient.

Errors in stock.—The errors in stock may be reduced to one general cause, viz. “the pride or “vanity of possessing large, handsome animals.

1st. *Error in sheep stock.*—As to sheep in particular, this pride of stock, however commendable, and however profitable it may be in countries that are adapted to it, does not seem at all suited to the bleak hills of Wiltshire.

“ Warmth and shelter are as necessary to produce perfect symmetry in the parts of an animal, “ as

"as to unfold the wings of a butterfly, or expand the petals of a carnation." Where these requisites to animal perfection cannot be had, it is useless to attempt breeding for beauty.

But it may be asked, whether those requisites cannot be had, and warm sheltered situations be found in Wiltshire?

Undoubtedly they may; but *not in a sheep-fold on Wiltshire hills*; and particularly at that time of the year when the fold is almost invaluable—"the fold of ewes and lambs for a barley crop."

It can never be too often repeated, that so long as South-Wiltshire remains a corn country, the *sheep-fold* must be the *sheet-anchor* of its husbandry; and until a new method can be found to manure its hill land, equally efficacious with the sheep-fold, breeding sheep, as a science, *solely for the beauty of the shape*, can never be introduced with success into this district.

Error in horses.—The pride or vanity of stock has been almost as hurtful to the farmers of this district, in the article of horses, as in sheep.

In both instances, the attention has been much more directed to get *large* rather than *useful* animals. Large heavy-heeled black horses have long been the fashion, and have almost driven the smart, active, and *really useful* horses, out of the district. Even the breeders of the North say, they can never breed cart colts big enough to please Wiltshire farmers.

There

There are, undoubtedly, some situations where the steepness of the hills, and others where the heaviness of the soil, require more than ordinary strength; but surely it would be better to add to the *number* of horses upon *particular occasions*, than to increase the size of *the whole*, especially as the roads to the market-towns are in general so very good.

It has been often asserted, that the benefits the Wiltshire farmers derive from their excellent markets, are more than paid for, by the expence of keeping fine horses to carry their corn to them.

Great horses not only *cost* proportionably more at first than small ones, but require much more and better food to keep up their flesh; and the pride of a farmer, in buying such horses, is generally followed by the pride of his carter, in keeping them as fat as possible. And as their food (which, in general is barley) is taken from the barn unmeasured, the expence of keeping them is seldom exactly known.

There are many instances, where the expence of keeping up a fine team of horses amounts to nearly the rent of the farm on which they are kept; and this expence is very seldom counterbalanced by any profit arising by buying them in when colts, and selling them at five or six years old, to go in stage waggons or London drays, although this has been the great pretence for keeping this kind of

of horses. Hundreds of colts have been bought at thirty guineas a-piece, *for the chance of selling one now and then for forty-five or fifty, two or three years afterwards*, under the idea that they *earn their bread* during the time the farmers keep them, and that the advance in their price is *all gain*.

But this is certainly a mistake. A large horse seldom comes to perfection till six years old; and during its progress to perfection, it must be *nursed, and treated tenderly, and favoured in its work*, or it will never attain its full size and beauty.

This nursing and tender treatment must be at the expence of the farmer; and the favour of work, at the expence of the older horses: so that the young ones, instead of *earning the bread they eat*, are eating that which the *others earn*.

If the farmers in this district were able to breed their own horses, this argument would have less weight; but the great price at which cart colts have been bought for many years, precludes the possibility of getting much by them afterwards. Besides, this kind of horse is naturally too heavy, and too slow in its step, for the purposes of Wiltshire farming, or perhaps, indeed, for the farm use of any district. In light soils, so much strength is not wanted. In heavy soils, the weight of the animal does injury to the land.

Large heavy-heeled horses are, undoubtedly, fit for steady heavy drafts on public roads; but, for a farmer's

farmer's use, a smaller and more active kind of horses will not only step quicker, but will bear their work more hours in a day; and will keep up their flesh, not only with proportionably less food, but with that of an inferior kind.

Error in cow flock.—The *cow flock* of this district is not numerous enough to be a subject of much animadversion, with respect to *its kind*.

The great error in this flock is the smallness of the *quantity* kept, the rage for *the sheep* having almost driven the cow flock out of the district.

South-Wiltshire farms are not calculated to keep *many cows*, but the greater part of them would keep more than they do, especially such as have much down land; and that, if repeated experience may be relied on, without diminishing the sheep flock.

Where there are water-meadows, cows are indispensably necessary to eat the after-grafts; and in winter they are always so, to eat the barley straw, and make dung. There is always as much distant land on a South-Wiltshire farm as the sheep-fold can manure. The home arable should be manured with pot-dung, and more especially when in preparation for a turnip crop.

If cows were *formerly* thought so useful, as to be reckoned indispensable on the farms of this district, they must certainly be much more so now, when their produce is worth, at least, *one-third* more than it was thirty years ago,

Few reasons need be adduced to prove, that the best kind of cow for this district is that which will bear *hard-keeping* best; and particularly that kind, which will best bear wintering in a straw-yard.

The expence of *hay*, in attempting to keep up the flesh of *large, baa-fonte cows*, during the winter, has tended very much to lessen the cow stock of this district.

Summary of errors in stock.—In summing up the errors in the stock of this district, it is worthy of remark, that the attempts to improve the breed of sheep, horses, and cows, have uniformly been, *by enlarging the size of the animal*; whereas, the only animal, in which a *real change for the best* has been made in this district, “*the pig*,” has been improved by *reducing its size*, and introducing a kind that will *live harder*, and that will be *fit for use at an earlier age*.

And, perhaps, this remark will apply as well to many other counties, as to Wiltshire.

Errors in the husbandry of the district.—The great errors in the husbandry of this district have been already noticed to be, the sowing more land with *corn*, and particularly with *wheat*, than can be properly manured with the stock on the farm; and the not making proper provision either by *hay*, or *green crops*, to winter all the sheep stock at home.

These two errors proceed from one cause, viz. an anxiety in farmers to have a certain number of

acres of wheat every year; and, frequently, without considering whether they have sufficient manure or not, or even whether the land be at all adapted to wheat.

This custom, originating in necessity in common-field husbandry, is too often retained on seviralty farms. The observation and good sense of farmers may, in time, alter this mode: but the temptation of immediate profit is frequently too strong to allow farmers to look forward to future consequences, and more particularly those who either know or fear that they shall soon quit their farms; and it is very natural for a farmer, who enters on a farm exhausted by over-cropping, to leave it in a similar state, unless he is compelled, by his agreement, to do otherwise. Nothing but leases for *certain terms* of years, and an obligation to pursue a *certain mode* of husbandry during the term, can prevent this practice. If a farm be entered on in an exhausted state; the tenant should have an allowance for such bad entry, and be *obliged* to leave the farm in a good state at the end of his lease.

It is impossible to lay down particular rules here, for the mode of husbandry necessary to be pursued on a South-Wiltshire farm during the term of a lease, or in what manner a farm ought to be left for a coming-on tenant.

They depend on soils and situations, but they ought, by all means, to be positively limited and settled,

settled, previous to a tenant's entry. Nothing but this can prevent the quarrels which are continually happening, between a going-off and a coming-on tenant, in this district.

The indispensable necessity of an obligation on a tenant, to pursue a regular course of husbandry on a Wiltshire-down farm, is a reason why farms should never be lett without leases in this district. In many counties, leases are understood to be only necessary for the *security of the tenant*, but here they are absolutely necessary for the *security of the landlord*.

The term of years to be granted by a lease should be so calculated as to bring *all* the land, or *as much* of it as possible, round in succession a *certain number of times*; so that the tenant may have just as many *complete years produce*, as he pays *years rent*, and *leave* the farm exactly *in the state he entered upon it*.

The term should be therefore such as to be the most divisible into the several periods of sowing the different kinds of land. Most farmers will expect to have liberty to sow some of their lowest and strongest lands to wheat every three years, and the lighter and more exposed parts every four; and they should not be permitted to sow their old burn-beak land oftener than every six years.

A term of twelve years seems, therefore, to be the most appropriate to the general husbandry of South-Wilts.

Proper size of a South-Wiltshire farm.—As the only difference between good husbandry and bad, is, that the former, by enabling a tenant to raise a greater comparative produce at a less comparative expence, enables him to acquire more profit to himself, and to give a greater rent to his landlord, than he could do by pursuing the latter, it may not be improper here to enquire on what sized farm, as well as by what mode of husbandry, a farmer in this district will be best able to do this; and this enquiry is particularly necessary at this time, when so great a part of South-Wiltshire is emerging into a new system, by the extinction of lifehold tenures, and the abolition of common-field husbandry.

At a time when this district was, in general, in a state of lifehold tenure, the size of farms was not always an object of the choice of the landlord, but of necessity; and while the lands remained in a state of commonage, the occupiers were in an equal state of advantage (or rather of disadvantage.) But in those manors where it is intended that the lifehold tenements shall fall into hand, and that farms shall be made out of them, it becomes an object of consideration, “what the most proper size of a South-Wiltshire farm is;” so as to ascertain the necessity of taking down unnecessary buildings, and to determine the number and situation of those necessary to be built in their room.

Much

Much has been said and written about the proper size of farms. *The impolicy of large farms* has been very frequently, and very ably disputed, and perhaps the *possibility of their being too small*, in particular counties, might have been as clearly demonstrated, were it not that it is an unpopular argument; and that there are few, who would not rather have their judgment, than their humanity, called in question.

But after all that has been, or can be said on the subject, the size of farms must always depend on soils and situations, and modes of husbandry; and every country *has its level*, to which farms of a certain size are peculiarly adapted; and if they are much above or below this, they must be managed to the disadvantage of the occupiers.

Those farms are of the most proper size, which return the most proportional produce at the least proportional expence. This ought to be the great object of every land-owner. The object of every tenant is to live by his industry; if that industry will not allow him to live, he had better be a labourer.

In those modes of husbandry where the hands, as well as the eyes of the farmer, and of every branch of his family, can be fully employed, small farms can be managed to advantage.

In dairy farms this is peculiarly the case; and it is frequently so in countries where the land is partly applied to breeding cattle, and partly to raising corn,

corn, especially where lime, sea sand, and similar manures, are to be fetched from a distance on horses' backs, as in Devon and Cornwall; and where the ploughing is entirely, or chiefly, done by the oxen bred on the farm; and even in some parts of South-Wiltshire, where small farms are situate on sandy soils, they may be applied, on a garden system, to raising esculent vegetables very advantageously.

In these cases, where circumstances enable *small farmers* to do almost the whole of the necessary work of their farms *with their own families*, they can bring their produce to market on equal terms with the large ones.

But on Wiltshire-down farms, where horses are necessary to plough the land, and sheep to manure it, the little farmer stands on a very disadvantageous comparison with the great one, being obliged to be at much greater proportional expence in horses and servants.

Every Wiltshire-down farm, if even so small as 40l. per annum, provided it is to be manured by the sheep-fold, requires a shepherd, a carter, and a plough-boy, and seldom less than three horses, but frequently four; and yet a farm of double the size may be managed frequently with one, or at the utmost, with two additional horses, and with one, or at any rate with two additional boys. For, whether these servants and horses have or have not full employ, their expence will be nearly the same;

• and

and if the farmer takes one branch of the active labour upon himself, the other branches are suffering for want of his superintending eye; and a farm of this kind furnishes very little employ for his wife and daughters.

The great object of consolidating farms, is an increase of rent; but it may be laid down as a certain maxim, that such increase cannot be obtained, except where a decrease of useless hands, and particularly of useless horses, can be made by such consolidation.

In this district, the consolidation of small estates has tended very much to reduce the number of horses,* and it is chiefly by this reduction, that a small estate is frequently worth more to be added to a farm, than occupied separately. But there must be a period in the size of farms, at which this advantage must end; and beyond which, a farm may be too big to be managed properly or profitably.

The size of a Wiltshire farm should be, therefore, such as the master's eye, and one *principal* ser-

* As proofs of the reduction of horses by consolidating small farms, the parish of Monkton-Deverill, which contains 8 yard-lands, or small estates, of 40l. a year each, was occupied, 50 years ago, by 7 farmers, who kept 29 horses. It is now in 4 hands, and managed with 19 horses; and the adjoining parish of Brixton-Deverill, which, 50 years ago, was in 6 hands, and employed 43 horses, is now in 3 hands, and employs only 26 horses; and the size of the horses is very little increased since the former period.

vant in each department, can manage properly; and for this, one head carter, with such a number of boys as may occasionally be wanted, and one head shepherd, with assistance at seasons of urgency, will generally be sufficient.

Perhaps the lowest size of a Wiltshire-down farm, that can be managed to advantage, is a good *six* horse business, and the highest a *nine* horse business, or *ten* at the utmost. Beyond this extent, *two* men are required in each of these subordinate capacities; a jealousy is excited between them; the master's eye is insufficient to manage them, and a bailiff is necessary.

This business becomes then, to all intents and purposes, *two farms*; and would certainly be better managed, if in the occupation of *two farmers*.

It is not meant here to say, that all the farms in this district, of a smaller description than a six-horse business, should be consolidated. That would be cruelty, as well as impolicy.

Where there are buildings proper for the occupation of farms in that state, and where tenants are settled on them, and, from peculiar circumstances, can live on them, and pay a rent equal to their value, they ought to be allowed to remain. It is only meant to apply to cases, where new farms are to be made at the owner's option, and is rather intended to point out the proper extreme of largeness, than the extreme of smallness; but, at the same time, with every

every deference to situations and circumstances, which will always furnish exceptions to all general rules in agriculture.

In agriculture, as well as in manufactures, it should always be remembered, how indispensable a sufficient *capital* to manage a business properly, is to the success of that business; and no man should engage in a concern, to which his capital is not so far equal, that he may not be obliged to sell his commodities in a sinking market, or be prevented, by want of money, from buying when he sees a proper opportunity.

2. NORTH-WEST DISTRICT.

SOIL.

THE soil of this district, though not so uniform as South-Wilts, may, nevertheless, be reduced to a few leading features; and those, in general, may be better defined by a description of the sub-strata, or under-soils, than by any peculiar characteristics of the upper-stratum, or top-mould.

The under-soil of a large proportion of it (viz. in a direction from Cirencester to Bradford) is a loose, irregular mass of that kind of flat broken stones, called in Wiltshire "Corn Grate;" of which the greatest part of the Cotswold-Hills in

Gloucestershire is composed, and which runs, without interruption, through the North-west part of Wiltshire, to its termination at Frome in Somersetshire; the stones being, in some places, thin enough for slates to cover houses; in others, laying in large flat beds, fit for pavement, and in some assuming the shape and qualities of freestone; but, in general, lying in those loose, flat broken pieces, so well adapted to building the dry fence walls in common use on Gloucestershire hills, and in many parts of this district, and lying usually in horizontal beds, mixed with earth.

The top-soil of this rock, or rather mass of stones, is chiefly that kind of reddish, calcarious loam, mixed with irregular, flat broken stones, usually called "Stone brash."

The goodness of this soil varies very much, according to its comparative depth to the rock, and according to the absence or presence of an intervening vein of cold, blue clay. This clay is of a marley appearance, but in general not sufficiently calcarious to be valuable as manure, and its presence is obvious to every traveller, by its natural and spontaneous production of oak trees; while its total absence, or, at least, its lying very deep, is as strongly denoted by the spontaneous and plentiful production of beautiful elms.

The North-west verge of the county, viz. from near Cirencester, by Malmesbury, and on the West side

side of the road from London to Bath, may be truly called the Cotswold part of Wiltshire.

Its external appearance, and internal component parts, are nearly the same with the Cotswold hills of Gloucestershire; except where the vein of clay lies so near the surface, as to make it colder.

This part is, on account of the thinness and looseness of its soil, *usually*, and, in many instances, *necessarily*, kept in an arable state; while the adjoining land, viz. about Chippenham, and from thence southward, through Melksham and Trowbridge, which happens to have a greater depth of soil, and has a pure warm rock, without the intervening vein of cold clay, is capable of grazing the largest oxen, and, perhaps, one of the most fertile parts of the country, unless, possibly, the vein of gravel next described, may be excepted.

There is a vein of gravel, of a most excellent small, pebbly, shelly kind, and in general covered with a good depth of rich loam, which runs in a broken line from Melksham through Chippenham to Cricklade; but its greatest body extends from Tytherton through Christianstow and Dantzey to Somersford, and perhaps the richest part of it is at or near Dantzey. .

It is a most excellent under-soil, warming and drying the top-mould, and it is only to be lamented, that its quantity in this district is so small. It is used for roads and walks, and, when washed or
...
screened,

screened, for drains in the cold clay lands which border upon it.

There are two principal veins of sand in this district. They are in general red, and of a sharp, loose, gravelly texture, and, of course not so fertile as the tough, close sands of South-Wiltshire. One of these runs from Redburn, by Seagry, Draycott, and Sutton-Benger, to Langley-Burrell near Chippenham. And another begins at the opposite corresponding hill at Charlcot, and runs through Bremhill to Bromham.

From this last vein, there are two detached masses at Rowd and Seend to the south, and probably the detached masses appearing at different places to the north of it, viz. between Charlcot and Swindon, are parts of the same vein.

All these detached masses have a mixture of some other soils, and are generally more fertile than the principal veins. Under the sand land at Swindon, lies a singular rock of stone of a most excellent quality, serving equally, in its different beds, for the purpose of building houses, paving and covering them.

The greatest part of the residue of the soil of this district, and particularly from Highworth, by Wotton-Basset to Clack, lies on a hard, close rock, of a rough, irregular, rustic kind of bastard limestone, of very little use but for the roads. The soil over this kind of stone is various, but generally cold,

cold, owing to its own retentive nature, and to the frequent intervention of a vein of clay.

Bradon Forest, (between Cricklade and Malmesbury) is an exception to the whole. It is a cold iron clay to the very surface; so bad, as to be called, by way of distinction, " Bradon Land," and was never so well applied, as when in its original state of wood-land.

Climate.—The climate of this district is various, and though, in general, milder than that of the high lands in the South-east district, is nevertheless cold, and in general, unfavourable to the purposes of early spring vegetation, owing probably to the cold retentive nature of *the under-soil of great part of this district.*

STATE OF PROPERTY AND FARMS.

IT has been already observed, that this district was formerly, and at no very remote period, possessed chiefly by great proprietors, who leased out the greatest part of it in small estates for *lives renewable*, at which time the country in general was in an open common field state, and most of the lessees lived on their own holdings. But that since that period, many divisions of property had taken place, and freeholders had been created by the dismemberment of manors, and gradual extinction of life-hold

hold tenures, particularly in those parts which have been inclosed and laid down to pasture. That many manors, nevertheless, remain in their original common-field state, and are still granted out on the same lifehold tenures, particularly those in mortmain, belonging to churches, colleges, schools, and other pious and publick foundations; but that upon the whole, property is much more divided than in the South-east district of the county. And although the present occupation of some parts of the county is in some instances in a few hands, particularly some great dairy and grazing farms in the North part, and a few large corn farms in the North-west part, yet a great part of the district may still be said to be *much subdivided* in its occupation, particularly in the neighbourhood of the manufacturing towns.

MODE OF OCCUPATION.

THIS district is for the most part inclosed, though not entirely so; there being still a few common-fields remaining, and some commons, but no very extensive tracts of either.

The stone-brash land, on the North-west verge, is chiefly arable.

A great part of the residue is in grass land, and a great proportion of that part is applied to the dairy,

dairy, particularly to the making of cheese. But although so great a portion of this district is now in a state of inclosed pasture land, it does not appear to have been so from any remote period of antiquity.

The straitness of the hedges, the uniformity of the inclosures, and the evident traces of the plough, are convincing proofs, that a great portion of it was originally in an open common field arable state, not excepting some of the very best meadow land on the fertile banks of the Avon.

The difficulty of tilling and cropping land naturally wet and heavy, and its aptitude to run quickly to grass, has occasioned, from time to time, great quantities of it to be laid down to pasture, and the increase of the rents of the land when so applied, occasioned in a great degree by the excellence and increasing fame of the cheese made in this district, has contributed to keep it in that state, and daily to increase its quantity.

The cheese of this district was for years sold in the London markets by the name of Gloucester cheese, but is now well known by the name of "North-Wiltshire cheese."

It was at first doubtless an imitation, and perhaps an humble one, of that made in the vale of Gloucester, but is now, in the opinion of many, at least equal, if not superior, to that of the favourite district of Gloucestershire, the hundred of Berkley.

Mr.

• Mr. Marshall, who has so fully examined, and so ably described, the present state of the dairy in both districts, leans strongly to that opinion.

• Although this district varies as much, apparently, in soil and situation as almost any two counties can do, it is amazing how strong the predilection is to the dairy, and particularly to the making of cheese in every part of it; and still more so, that the cheese produced on soils and situations totally dissimilar, should frequently be found, when under skilful management, to be equally good. A strong proof, that although soil and situation may, in some measure, contribute to the production of that necessary article, yet art contributes more, or, perhaps, in other words, the dairy-women of this district, who happen to be situated in soils and situations naturally unfavourable to the making of cheese, have by attention and observation, found out the causes and the remedies for the faults peculiar to cheese made from their own dairies; and nothing has contributed more to excite that attention and observation, than the rivalry necessarily produced in a district, anxious, at first, to rival their neighbours in the vale of Gloucester, and then to keep up the superiority in goodness, and of course in price, which North-Wiltshire cheese had, by degrees, acquired.

But although the dairy has, from time to time, made great inroads on the arable lands of this district,

district, *that* has likewise, in its turn, lost ground, and particularly on the most fertile lands, by the rage for grazing.

The rich and the lazy find this a pleasant resource; and the dairy, though much more profitable, is obliged to give way to it.

Even those who are professedly dairy farmers can seldom resist a propensity to apply a little of their best land to the purpose of grazing their own dry cows, and of fatting a few sheep in winter, or taking in stock sheep to winter for the down farmers.

It may, therefore, be fairly asserted, that notwithstanding the strong natural predilection of this country to the dairy, and the peculiar excellence of the dairy-woman in the making of cheese, at least one-fourth of the grass land in this district is applied to grazing.

The impropriety of this innovation, in many parts of this district, will be afterwards noticed.

The dairy farms in North-Wiltshire have, in some cases, a small quantity of arable land annexed to them, in others not.

The propriety of this appendage will also be afterwards enquired into. *

LIVE STOCK.

As the dairy cows of this district form so great a part of its depending stock, it is an essential object

ject of enquiry, which is the most proper kind of cows, for the particular purpose for which they are principally kept in this district; viz. the making of cheese.

Cow stock.—It does not appear, at this time, what was the original kind of cow kept in this district; probably, the old Gloucestershire cow—a sort now almost extinct, or, perhaps, as is now the case in Somersetshire, a mixture of all kinds. But the universal rage, for upwards of twenty years past, has been for the long-horned, or, as they are called, the “North-country” cows; and at this time, perhaps, nine-tenths of the dairies in this district are entirely of that kind. The reasons given for the general introduction of this sort are, the nearness of their situation to the North-country breeders, where they can get any quantity they want at any time, cheaper than they can rear them in a country where land is in general too good, and rented too dear for that purpose; and, especially, as in consequence of the great demand for the Bath and London markets, calves will pay better to be sold for veal, than to be kept for stock; but, perhaps, the real reason is, that “pride of stock,” which, operating like the pride of sheep and horses in South-Wiltshire, has gradually led the farmers to an emulation in beauty and size, more than in usefulness and profit; and which pride, the breeders have not been wanting in using every artifice to create and promote.

Two ostensible reasons are given by the dairy farmers, for continuing this kind of stock, viz. that they can make more cheese from each cow; and that these cows will yield more, when thrown off to be fattened, than any other sort.

The quantity of cheese produced from each cow in this district, is certainly, as Mr. Marshall justly observes, amazingly greater than is common in any other cheese-making district; sometimes as high as $4\frac{1}{2}$ cwt. or near 5 cwt. per cow; seldom lower than 3 cwt.; perhaps $3\frac{1}{2}$ cwt. is a good average in a good cheese-making year, on every cow that calves in proper time. But the second reason, viz. that this kind of cows produce more than any other kind, when sold for fattening, is an answer to the first, for this simple cause, because they are bigger.

If, therefore, it can be proved, as the opposers of this breed say it easily can, that four cows of a small size will, with the same food, produce as much, or more cheese, than three of the large long-horned kind, it will be easy to prove, that the smaller kind will be the most eligible stock; first, because, in case of the death of an animal, the loss is not so serious, and, principally, because the weight of a large animal is an essential injury to land of which the great fault is, its being already too cold and wet. Besides, it is allowed, even by the advocates for this kind of cow, that they do not come to perfection, until they are, at least, two years older than cows

of a smaller kind ; and that, whatever may be the comparative merits of the female, the oxen are certainly not only the ugliest, but the worst and least saleable of all kinds bred in this kingdom.

These are, undoubtedly, two objections against a dairy-man breeding his own stock out of the long-horned kind of cows ; and yet no intelligent man will deny the use, and indeed the necessity, of breeding his own stock, where it can be possibly effected ; as no cows ever settle so well in a dairy, as those actually bred on it.

Many attempts have been made lately, to supplant the long-horned cows, by introducing the Devonshire kind into this district. The comparative merits of the two species are very warmly contested : the Devonshire cow, undoubtedly, gets ripe at an earlier age than the long-horned cow, and, being a smaller animal, is less liable to tread and poach out the wet lands ; and being disposed to get fat at an early age, and when fat of a greater comparative value to the butcher than almost any other kind, is much better calculated than the long-horned cow, for those who *breed* for the purpose of fatting.

How far these properties, particularly that remarkable disposition to get fat at an early age, may answer the general purpose of a dairy, where milk alone is required, remains to be proved.

It is possible, that each of the two kinds of cows may be most proper, for the particular purposes for which they are kept. But the supporters of the Devonshire cows say, that they are equally good milkers with the long-horned species; and yet, that they are so much smaller, and eat so much less food, that three of these may be kept on the same land as will keep two long-horned cows. If this can be proved, the question is decided at once.

There seems to be an increasing opinion of the merits of the Devonshire kind, and, perhaps, if half so much care and attention had been paid to the breed of the Devonshire cows, as has been bestowed on the long-horned kind, it is probable that the former might have been still more improved, and that the comparison might have been much more in their favour.

Whatever may be the real comparative merits of the two kinds of cows for the dairy, there is not a doubt but the Devonshire kind are the most proper for fattening; and as to the oxen bred from the two kinds, it would be injustice to the Devonshire oxen, even to make a comparison between them.

Swine.—Pigs are looked upon to be a necessary appendage to every dairy farm; a great number are bred with the whey and offal of the dairy, and many fatted; barley-meal, mixed with the whey, is the general fattening food; peafe are not so much used as formerly.

The kind of pig is generally a mixture of the long-eared white, with the black African, or negro pig; which cross has been found to be a very great improvement.

Stock fatted for sale.—There are great numbers, both of cattle and sheep, fattened in this district. The cattle consists chiefly of long-horned cows, turned off from the dairies, and of oxen brought from different counties, particularly from Devonshire. They are usually bought in very early in the spring, so as, if possible, to be finished with grass; but the largest and latest are taken into the stalls, and finished with dry meat, chiefly hay.

Corn is but little in use for fattening cattle in this district; of late, potatoes have been introduced for winter fattening, dressed with steam, and mixed with cut hay or straw, as is mentioned in the description of the south-east district, and found to answer. Bath takes off many of the fat cattle of this district; many are sold at Salisbury market for the consumption of Hants and the adjoining counties, but the greatest part go to Smithfield.

The sheep fattened in this district, are usually bought in at the Michaelmas fairs; the principal object is, to fat them, during the winter, on land that will not bear the treading of heavy cattle; sometimes ewes with lamb are bought, with the object of fattening both ewe and lamb in the succeeding summer.

Both

Both cattle and sheep are not only fattened by professed graziers, but frequently by the dairymen, and sometimes to the injury of the dairy, particularly when sheep, by being kept on too late in the spring, injure the hay crop, or prevent the cows from being turned early to grass.

Sheep.—Many sheep are bred in this district, part on a folding system, and part purposely for fattening. The number of sheep folded in this district has certainly decreased, and perhaps a still greater decrease will and ought to take place on land which can be better appropriated than under that system.

The decrease of the number of sheep bred in many parts of the kingdom, and the vast increase in the consumption of mutton, seems a paradox to be accounted for in no other way, than by supposing the animal to be killed at an earlier age, and this certainly is the fact. Sheep were formerly not thought *eatable* till four, five, or even six years old; at this time, three-fourths of the mutton is killed at two years old. The old sorts of sheep did not come early enough to perfection to do this, and new sorts were necessary; this laid the foundation of that spirit of sheep-breeding, which has been carried to a pitch, particularly in Leicestershire, almost beyond credibility: and this spirit (though sometimes wrong applied, and particularly in the South-east part of this district) has enabled the kingdom to find a supply for the increasing demand of mutton.

It has been said already, in the description of the South-east district, that two kinds of sheep are necessary for the two distinct purposes of folding and fatting, viz. a kind to walk, and a kind to stand still; the latter, which is the kind adapted to come early to perfection, are particularly proper for this country, where, in some parts, the land is adapted to a convertible system of corn and grass; and in others, there is a proper mixture of arable and pasture land. And this practice of breeding sheep, purposely for fatting at an early age, seems to gain ground, particularly since the Leicestershire sheep, which are peculiarly adapted to that purpose, have been introduced.

[Here follow some reflections of the ingenious author, tending to enforce his opinion last expressed, but which must be omitted for the sake of brevity. For the same reason must be omitted other valuable reflections in this district, under the different heads of Tillage, Manures, Implements, and Seasons; the latter, as being considerably different in the two districts; but all of which are well worth perusal by the inquisitive and intelligent farmer.]

WASTE LANDS.

ALTHOUGH the greatest part of this district appears to be inclosed, and it contains no very extensive entire tracts of waste land, yet there are numerous small commons in almost every part of it, in a very neglected, unimproved state: and there are many parishes,

parishes, in which there are still common-fields; and those in a very bad state of husbandry.

The greater part of the common-fields lie on the stone-brash land, on the North-west side of the county; and others in the deep, strong land, from Calne by Broadtown, towards Highworth; but the commons lie chiefly in a North-east line from Westbury to Cricklade, through the centre of the richest land in the district.

• There are numerous instances, in which the common-field arable land lets for less than half the price of the inclosed arable adjoining; and the commons are very seldom reckoned worth anything, in valuing any estate that has a right on them.

Although great part of this district appears to have been, at no very remote period, in a commonable state; and although the improvement on the lands, heretofore inclosed, has been so very great, the progress of inclosure therein has been very slow during the last fifty years. The reason seems to have been, the very great difficulty and expence of making new roads in a country naturally wet and deep, and where the old publick roads were, till within the last few years, almost impassable. But this reason having now nearly ceased, by the introduction of several new turnpike-roads through the district, and by the spirit which now so generally prevails of making good the approaches to them from the interior villages, it is to be hoped, that

so great an improvement as that of inclosing and cultivating the commonable lands, will no longer be neglected.

The tracts of commons which are mentioned to lie in a line from Westbury towards Cricklade, are detached and dispersed in numerous pieces, and belong to a variety of parishes, but the whole content of them is supposed to exceed three thousand acres. And though the greater part of them at present turn to very little account, not only from the wet, rotten state in which they lie every winter, but from the unprofitable kind of stock that are usually kept on them, they want only inclosing and draining, to make them as good pasture land as many of the surrounding inclosures.

The improvement by inclosing them might, in many instances, be taken at from fifteen to twenty shillings per acre; and, indeed, inclosures of commons of this description frequently improve, not only the commons themselves, but also the adjoining inclosures, *by preventing the occupiers from continually mowing the latter, and carrying off the hay.*

There are a few heaths in this district, (and but a few) which might be improved by ploughing. There being but few instances where there are alternative manures, such as lime, chalk, marle, &c. which are properly adapted to them, to be got very near; the greater part of them, particularly those about Bradon Forest, would, in general, pay better for planting.

Very

Very great improvements might be made, by inclosing the common-fields in this district; and particularly those which are in need of draining, such as those in the deep, cold vein of land about Broadtown, Elcombe, &c. many of which would be much more valuable, if turned into pasture land, than in their present arable state. Even the common-fields in that part of this district, which is apparently the driest, viz. the North-west part, are so much in need of draining, that few of them are safe for sheep in a wet autumn. This can only be remedied by inclosure; and no greater proof can be adduced of the necessity of it.

In fact, the open lands of this district, small as they appear to be, when compared with the land already inclosed, yet, being capable of such vast amendment by dividing and draining, hold out a source of future improvement to the landholders in this district, of many thousands a year; for the neglect of which, there seems, at present, very few reasons. Those few will be afterwards stated, and attempted to be obviated.

With respect to the decrease of population, already felt in consequence of former inclosures, or to be apprehended from future ones, it has been already observed, in our remarks respecting the South-east district of the county, that the extinction of lifehold tenures, which has been gradually taking place for the last century, tends, undoubt-
edly,

edly, to decrease the number of farmers ; and that though this event may be sometimes hastened by inclosures, yet that it may, and frequently does, take place without them. But in this part of the county, where land is in general so valuable, the effect of consolidating small farms will not be so visible as in South-Wiltshire. The vast improvements made on the lands in consequence of inclosure, particularly by draining, and by the laying down to pasture such land as was too wet for arable, has increased the rental of the country so much, that there will, probably, be always land sufficient for the occupation of the inhabitants of it.

It has been already stated, that there are a great number of small freeholders in this part of the county ; and as these divisions of property have generally happened in the inclosed parts, it has tended to retain those inhabitants, who would have been otherwise driven out by the extinction of life-hold tenures.

In many parts of the district that are still in a common-field state, the landholders would be much greater gainers by an inclosure, than it is possible they can in many parts of the South-east district of the county ; as there are so many parts of the land that, when inclosed, may be applied to the purposes of a small farm, without the necessity of keeping a flock of sheep to manure it; viz. by keeping that part which will be necessary to remain in arable,

arable, on a turnip system, either for feeding cattle or sheep, or for wintering sheep for the down farmers; by laying down the wet parts to grass, either for the dairy or for feeding; and by applying the sand lands on a garden system, to raising esculent vegetables. While on the thinner and poorer parts of the North-west part of the county, which must necessarily continue in an arable state, the improvement to be obtained from inclosures must be derived from putting the occupation into *fewer hands*, and making farms of such a size as can be managed to the greatest advantage of the tenant, the landlord, and the community.

With respect to the decrease of *labourers* in this part of the county, there is very little to be apprehended from inclosures. So little manual labour is done to the uninclosed land, in its present state, that every alteration that has improvement for its object, must increase manual labour, and of course, the number of labourers.

The fencing and draining the land, and making and keeping good roads, in a country naturally so deep and wet, will be a perpetual source of employ for labourers.

These are the improvements, which have already so wonderfully increased the value of land in this district; and as so much remains to be done, there will probably be, in future, more complaint for want of labourers, than for want of work to employ them

them in, especially in the neighbourhood of the manufacturing towns.

DRAINING.

THE use of covered drains has been long known in many parts of this district.

They have been made in different modes with turf, with wood, with stone, but chiefly with the latter, on account of the facility of getting it, there being but few parts without stone of some kind or other, within a moderate distance.

Stone drains.—The stone of the corn-grate rock, which composes the under stratum of so large a portion of this district, is of a peculiarly favourable flat shape for under-drains; and no land requires it more than the vein of cold clay, which so frequently accompanies this rock. Much of this kind of land has been so drained, and much remains yet to be done. The drains of this stone have been, in general, made about ten or twelve inches wide, with perpendicular sides. In some cases, the stones are so placed, as to leave a water-course at bottom, by setting two flat stones triangularly to meet at the points; in others, and perhaps a better way, by covering the bottom with a flat stone, and then putting three other flat stones upright, leaving the water to find its own way between them; in both cases,

cases, filling up the residue of the drain to the top, or near the top, with loose stones; but the fault, in the greater part of the under-drains that have been made, has been, that they have not been made deep enough to answer the purpose of draining the ground effectually; the object of them having been oftener directed to drain the water from the surface, (where perhaps it does in fact but little injury) instead of draining off the land springs, which are in, or run upon, the under-stratum, and which are poison to vegetation.

In some few parts of this district, where stones are scarce, and those not of a shape well-adapted to the purpose, particularly about Steeple-Ashton, much ingenuity is shewn in the different methods of draining which have been introduced.

Turf drains.—In some instances, they have drained land to the depth of three or four feet, by first digging a spit of earth out, and then boring out the ground with a three-inch borer, so as to form a pipe of the depth required, and only three inches wide.

If the soil be loose, they have drawn in small bushes or boughs, so as to keep it from running together; but if strong and tough, and where the pipe is not required to be so deep, they have left the pipe open, turning down the first spit upon the shoulders of the pipe, with the grass side underneath.

In other cases, where only small round stones could be got, and those not plentifully, they made

the

the drain taper, from nine inches at top, to nothing at the bottom, and perhaps three feet deep, and filled them up, by dropping first the smallest stones, and then the large ones, to near the top, and then finishing it by placing a thin turf on the stones.

Gravel drains.—Where gravel is more plentiful than stones, screened or washed gravel has been found to answer the purpose very well.

In all cases, the general opinion seems to be, that those drains have lasted longest which have the least, or rather the narrowest, water-way left at bottom; as, in that case, the force of the water has been sufficient to clear away any little obstacles that might chance to get in.

BENEFICIAL PRACTICES.

Dairy system.—THE system of making cheese, as managed in North-Wiltshire, would certainly be of the greatest service in many parts of the kingdom, if it could be introduced into them; and the production of good cheese, in this district, from land totally dissimilar, as stated in the preceding observations, shews that the goodness of this article does not depend so much on soils or situations, as is generally imagined. Indeed it is well known, that the fame of this district for good cheese is not very ancient. The circumstance of its being sold for

Gloucester

Gloucester cheese till within these few years, shews that Gloucestershire had the *name* first; though the quantity now made in that county is far less than what is made in this district, according to the report of Mr. Marshall, who spent much time in both districts, for the purpose of examining into this particular branch of rural economy.

Indeed, many of the best dairy farms in the district appear, as has been already stated, to have been in an uninclosed state of arable, at no very remote period of antiquity; and many of the farm-houses and buildings appear to be of modern erection.

The convenient situation of the houses and buildings of a great part of the dairy farms of this district, shews that many exchanges in property must have taken place before this desirable circumstance could have been obtained.—An object well worth imitation, in all countries where it can possibly be adopted; and, perhaps, there is no *single* local circumstance, that contributes so much to the excellence of the dairy system of this district, as the general convenient situation of the lands round the houses, as a common centre; so that the dairy-men are able to drive all their cows home to milking, and thereby to put all their milk together of an equal temperature; and by beginning their work much earlier in the morning, they can make cheese twice a-day during the whole season.

This

This is impossible to be done, where servants must be sent to milk cows in detached and distant inclosures; as is too frequently the case in many dairy countries, and particularly in the county of Somerset.

Good butter is made in every part of the kingdom, because the process is simple, and known every where; and if the same methods were practised in making cheese in other countries, as are used in this, there seems no good reason why cheese of equal goodness might not be made in many other countries.

As Mr. Marshall has so fully detailed the methods used by the North-Wiltshire dairy-women, it is unnecessary to repeat them here.

But it may be proper to add one general remark on making cheese; viz. that there are few countries, which are famous for bad cheese, where the reason may not be traced much oftener to a fundamental fault in the process of making, and particularly in that essential article the rennet, than to any particular local fault of the soil or situation, or even to want of care and attention in the dairy-women.

Draining of land.—Another practice, in this district, is the attention that has, of late years, been paid to the draining of land.

The great object of manure is to warm and excite a fermentation in the land; but the land must first be in a state to receive it, or it is useless to put it on.

Manure

Manure may almost as well be thrown into the water itself, as put upon land so soaked and poisoned with water, as to be incapable of being warmed by the manure.

This improvement, which may be called the basis of all other improvements, in a wet cold country, can never be too much recommended, and is well worthy of imitation in many other counties; in which, though quite as necessary as in this district, no kind of attention is paid to it.

IMPROVEMENTS FOR CONSIDERATION.

Breed of Cows.—THE management of the dairy part of this district has been a source of so much profit, as well as credit, to the county, that it certainly must, in its principle, be right; and while there is so much to admire, it would be invidious to cavil at trifles. Whether the dairy-men are wrong or right in their choice of the kind of cows, will, probably, be hereafter determined. If they could buy another kind of cows, *immediately fit for the pail*, as easily as they can the long-horned ones, it is probable that kind might not be so universal; but, it is clear, that they think they get *nothing* by breeding their own stock, and perhaps they may think right.

The cows they buy are bred in a country whose cheese does not stand so high in repute as that of North-

North-Wilts, and of course may be bred cheaper than they could breed them at home; but if this argument be well founded, are the North-Wiltshire dairy-men right in fatting calves? Does not the fatting of calves consume as much milk as the weaning of calves? And would not the additional cheese they could make, if their cows dropt in March or April, instead of January or February, pay as much or more than fat calves; without reckoning the injury done to the constitution of the cows, by calving repeatedly in the winter. Undoubtedly, nothing has contributed so much to keep up the high price of cheese and butter, as the amazing increase, of late years, in the quantity of winter veal sold, not only in the London market, but in almost all the towns in the kingdom.

North-Wiltshire must send its veal to the London market, on the same terms as other counties within the same distance can do; while that veal is made at the loss of cheese, which would yield 20 or 30 per cent. more than the average price of cheese made in those counties. This is the reason given, why North-Wiltshire dairy-men wean so few calves, and why they make so little butter for sale. The same reason seems to apply against their fatting calves.

But this is meant as a hint for consideration, rather than an object of censure.

Arable management.—As to the management of arable land, North-Wiltshire, certainly, does not shine.

It

It is a happy thing for the land-owners of the district, that the predilection of the occupiers is so strong for pasture land. Land so cold and so wet in its nature, as a great part of the vale^{land} of this district, can never be *permanently* improved while under the plough. *The bare mention of a known fact, that the comparative value of land of equal native goodness, in a pasture or an arable state, is usually as two to one, is a sufficient proof of this.* The lands that are cold and wet should be laid down to grass, and drained; and this would increase the quantity of manure for the warm and dry lands, which would be very profitably kept in tillage.

This particularly applies to all the deep, cold soils, between Chippenham and Wootten-Basset.

As to the stone-brash land, in the North-west part of the district, it has been already observed, that the general system of husbandry, and particularly the almost entire dependance on the sheep-fold for manure, is not strictly reconcileable to reason, in many parts of this district. All the light and dry parts, which require treading to make them closer, are undoubtedly proper for sheep-folding; but many of the wet cold parts are not at all calculated for that system. Those of the latter description are by no means fit or safe for sheep without draining; and as that is seldom practicable to any extent, in an arable state, many of them should be laid down as pasture. Those parts which are already

ready laid down, are remarkably sweet-feeding ground, and in that state of husbandry the country would still be calculated for feeding sheep, but not on a folding system. The long-wooled sheep, either the Cotswold or the Leicestershire, are peculiarly proper for such kind of land, where a part might be always in pasture, and the arable land kept in that kind of husbandry that would produce green winter crops.

In those parts of the country where the land is light and dry, the sheep-fold system might still be used. The large farmers would be much better able to support a flock than they now are, by laying down the wet parts of their land to pasture, and sowing sainfoin on the dry and poor parts; and the small farmers, whose arable land required folding, would find their account much more in taking in sheep from the down farms to eat their green winter food, than by keeping small flocks of their own.

It has been already remarked, that notwithstanding the dairy system is so well understood, and is so very profitable in this district, there is, nevertheless, a strong propensity, in many parts of it, to grazing cattle. It is undoubtedly for the interest of the community, that cattle should be grazed somewhere; but it also is their interest, and still more so the interest of every individual, to apply his land to the purposes for which nature designed it. Nature never designed many parts of this district, and particularly

particularly the cold wet parts, where oak timber is the natural weed of the country, for grazing. On those soils the *summer* is too short for that purpose, and they never can be applied to so great advantage, as that of keeping dairy cows.

PRICE OF PROVISIONS.

THE prices of provisions in Wiltshire, and particularly in the South-east part of the county, when compared with the other Western counties, may be said to be high.

As the South-east, or down part, of the county produces very few articles of human food, except wheat, *that* is the only article which can be said to be cheap in that part; and so great an influence have the Bath and London markets on the price of other provisions, which are raised in the North and West parts of the county, that butcher's meat, butter, and cheese, particularly the two former, are usually at least ten per cent. dearer on an average at Sarum, than at Wells, or Shepton-Mallet, in Somersetshire, and sometimes even twenty per cent. higher than at Exeter; and as these causes are likely to be permanent, the effects may be expected to be so likewise.

The certain demand for, and consequently the high price of, the produce of this county, is un-

doubtedly, as has been said before, an advantage to to the landholders of it; but it is in another sense a disadvantage to them, (viz.) in the article of labourers; although the wages of the labourers have increased considerably within these few years, yet it is now barely sufficient for their subsistence, and a few days illness brings them to the parish.

The parish rates are of course very high, and daily increasing; and if the system newly adopted in the clothing manufactories, of spinning the wool in the towns by machines, which used to be done by women and children in the villages, becomes universal, the price of labour must still be very considerably increased.

Another great cause of the distress of the poor, in many parts of this county, and particularly on the downs, is the scarcity of fuel.

Coals are already advanced very considerably; and let the price of carriage be ever so much reduced by good roads, or even by canals, coals must still be dear in many parts of the county.

Wood is the natural, and should be the depending, fuel of a great part of Wiltshire.

How necessary, therefore, is it for those who have woods to preserve them, and of those who have not, to plant some? But as this must necessarily be a work of time, it may be useful to hint, that for a quicker remedy of this alarming inconvenience, a few acres of furze might be preserved from

from the plough, in those parishes where it already grows, and sown in those where there is none.*

This might be sold for fuel, to those who could afford to buy, and given, instead of parish relief, to those who could not. Those who have hearts to feel for the distresses of the poor would, by this expedient, gratify their humanity; and those (if there are any such) who feel only for the preservation of the hedges, would find this a more effectual way to prevent wood-stealing, than a whip or a prison.

It is a melancholy fact, that without any particular habits of oppression on the part of the farmers, or dissoluteness on the part of the poor, the labourers of many parts of this county, and particularly of South-Wiltshire, may be truly said to be at this time in a wretched situation.

The dearness of provision, the scarcity of fuel, and above all, the failure of spinning work for the women and children, have put it almost out of the power of the village poor to live by their industry; and have, unfortunately, broken that independant

* Furze is a very tender plant when young, and therefore should not be sown till late in April, or early in May.

It may be sown either alone, or with a crop of barley, white oats, or buck-wheat; and if it be preserved from cattle, will be fit to cut in three or four years.

It likes a *dry* situation, and if there be a *depth of soil*, it does not signify how poor it is.

spirit, which, in a very peculiar degree, formerly kept a Wiltshire labourer from the parish books.

The farmers complain, and with reason, that the labourers do less work than formerly; when, in fact, the labourers are not able to work as they did at a time when they lived better.

There is no necessity of heightening this melancholy picture, every landholder of the county knows it too well; and the resident magistrates, in particular, have it daily in their view; and, to their credit be it spoken, the landholders are using every exertion, by premiums, bounties, and other indulgencies, to introduce new kinds of employ for the poor, to supply the loss of spinning wool for the cloth manufacturers, or to induce the manufacturers still to bring them wool, by giving bounties equal to what they can save by spinning it at home by machines.

MANUFACTURES.

THE extent of commerce, or rather of manufactures, in the county of Wilts, is very great indeed; but the woollen manufactory is, by far, the most general.

Salisbury manufactures great quantities of flannels, and fancy woollens, and has a considerable manufactory of cutlery and steel goods. Wilton,
a large

a large manufactory of carpets, and fancy woollens. Devizes, a considerable manufactory chiefly of fancy woollens. Bradford, Trowbridge, Warminster, Westbury, and all the adjacent towns and villages, from Chippenham to Heytesbury inclusive, carry on most extensive manufactories of woollen goods, a great part of which is superfine broad-cloths, kerseymeres, and fancy cloths.

At Mere, and its neighbourhood, there is a manufactory of linen, chiefly dowlas and bed-ticks.

At Aldbourn, a manufactory of cotton goods, chiefly fustians and thicksets.

At Swindon, and its neighbourhood, a considerable manufactory of gloves.

Indeed, there is scarcely a town in the county, that has not a manufacture of some kind or other.

The vast population of the county of Wilts, occasioned by their various and extensive manufactures, and the daily increase of population of Bath and Bristol, occasion a never-failing demand for all the productions of the land of this county.

The wheat, and in particular the barley, the cheese, and butter, and every other necessary of human food, are sure to find a market,

These are undoubtedly advantages, and very great ones, to the landholders of this county in general; but, perhaps, more to the landholders at a few miles distance from the seat of manufactures, than to those immediately on the spot,

It seems to be allowed, even by the manufacturers themselves, that although the nation derives an inestimable advantage from manufacture, in a general and commercial point of view, and though the landholders throughout the kingdom have been able to advance the rents of their lands very considerably, in consequence of an increased consumption of its produce, yet the manufactures are not always blessings to the landed interest of the county where they are *immediately situated*.

The advantage arising to the landed interest in the immediate neighbourhood of large manufactures, is an increased demand, and, of course, an increased price for the produce of the land. But this extends only to a few articles of daily indispensable consumption, such as milk, butter, poultry, hay, straw, &c. In the heavy necessaries of life, such as wheat, barley, oats, cheese, butcher's meat, &c. the advantages are shared by the landholders at a distance.

The disadvantage to the landholders on the spot, is an increased population, and that of the most undesirable kind, viz. "labouring poor;" who, in times of a quick trade, raise the price of labour almost beyond the reach of a farmer, and when trade in general, or that single branch to which they have been brought up, fails, fall a burden on the poor rates, greater than the land is well able to bear. In the woollen manufactories of this district,

this

this has long been the complaint of the landholders, and yet the manufacturers have hitherto made them in some degree a compensation, by the employ that they have furnished in spinning work to the women and children of the labourers in agriculture.

But unfortunately for the landholders, even this compensation seems likely soon to be at an end, by the general introduction of machines, to supply the place of manual labour, whereby all those parts of the manufactory, that have hitherto been done in the country villages, will be done at the immediate residence of the manufacturers.

The consequence to the landholders will be, that the families of the labouring poor must fall on the poor rates, or the price of labour must be advanced, equal to the loss of the former earnings of the poor.

The consequences to the manufacturers themselves are not yet known. How far the general introduction of machines may affect this part of the kingdom, or the kingdom in general, by making those manufactories "moveable" that have hitherto been "fixtures," time must determine.

OBSTACLES TO IMPROVEMENT.

THERE are two obstacles to improvements in agriculture, necessary to be particularly noticed here; viz. 1st. The frequency of small water-mills, as

as particularly injurious to water-meadows; and, 2dly. The difficulties thrown in the way of small inclosures of commonable lands, by the expence of an act of parliament; the first applying more particularly to the peculiar husbandry of Wiltshire, and the second being equally an obstacle to improvements in every other part of the kingdom, where there are lands still uninclosed.

Water-mills, which are very numerous in Wiltshire, and particularly in the South-east district, are, in many instances, exceedingly injurious to water-meadows.

It was formerly thought necessary, that every manor, whose situation permitted it, should have its own mill, for the convenience of the tenants to grind their corn; and a great part of these mills remain at this day, although few people now grind their own corn, and although, by the improved mechanism of mills, one can now do the work that three or four did formerly.

Between Warminster and Salisbury, a distance of about twenty miles, there are nearly twenty water-mills; although one-third of the number (if well constructed) would be more than sufficient to do all the work of the country. Many of these mills are very injurious to the water-meadows below them, and frequently prevent the making new ones. And the same inconvenience exists on the rivers in general throughout the county, and particularly in the South-east district.

To

To remedy this, in all acts of parliament for inclosures, where there is a possibility of *making water-meadows*, or of *improving those already made*, power should be given to the commissioners to take from the mills, at stated times, *all, or such part*, of the water as should be absolutely necessary for the water-meadows below; and where such mills are really unnecessary, to direct them to be taken away. Such commissioners being at the same time empowered to fix an annual rent-charge, to be paid to the owners of such mills so injured, by the owners of the land so benefited, as is done in the case of canals, subject to the like appeal as is allowed in canal acts.

In parts of the country which are already inclosed, disputes frequently happen between owners of mills and owners of water-meadows, and which are almost impossible to be explained or understood in a court of justice.

Perhaps a mode might be practicable of empowering justices of the peace, at their quarter-sessions, to order a reference to men of judgment in the neighbourhood, and to make their award matter of record to bind the parties.

The other obstacle to improvements in agriculture, is the impediment thrown in the way of inclosures of commonable lands, particularly where the quantity of land is small, or the number of proprietors large, by the difficulty and expence of procuring acts of parliament for that purpose.

It has been already remarked, that there are a great number of common-fields still remaining in Wiltshire, particularly in the South-east part of the county; and that in the North-west part, there are still many open common-pastures. These are undoubtedly obstacles to all improvements in agriculture, and ought to be divided without delay.

There have been many common-fields lately inclosed in the South-east part of the county; but in the North-west part, inclosures have gone on very slowly for some years past. One reason has already been given for this, viz. the badness of the roads, and the difficulty and expence of making such new ones, as would be necessary in case of an inclosure. This impediment will soon be removed in North-Wiltshire; and good roads will enable the owners of the adjoining commonable land to make the most of it. And there is not a doubt, but that the greatest part of the commonable lands in the county would soon be divided, provided the *legal difficulties* which stand in the way of inclosures could be removed.

It is well known, that no commonable land, *be it ever so small*, can be inclosed or divided without act of parliament, unless by the consent of *all* parties. That consent is always difficult to be got, and sometimes (particularly where some of the proprietors are *minors*, or under any other *legal disability*) impossible. An act of parliament is then the only resort.

resort. But it frequently happens, that the quantity of open land belonging to one manor, is insufficient to afford an expence of, perhaps, near 300*l.* for an act, besides the subsequent expence of working a commission. And although the land-owners of *two or more manors* might join in one act, yet it is a difficult matter to get them to agree on the terms of it; especially when, as is often the case, their interest, or at least their claims, on the commonable lands, clash and interfere with each other.

The expences of an act of parliament for an inclosure, are not entirely occasioned by the fees of the two houses, but by the delay and uncertainty of attendances in London, owing to the multifarious and increasing business of parliament; and which an annihilation, or even a reduction of those fees would tend much more to increase than prevent.

Remedy proposed.—But there seems to be a mode by which this difficulty might be, in a great measure, obviated, and *small* common-fields or commons divided at a trifling expence, viz. by empowering the justices of the peace to receive applications for that purpose at the quarter-sessions; and particularly in those cases where a very great majority of the proprietors were consenting, or where the objections were chiefly founded on *legal disability*.

Notice of the proposed application to the justices might be given (in the way now prescribed by parliament)

ment) in August or September. The bill of the proposed regulations of the inclosure might be delivered at the Michaelmas sessions, and made public immediately after. Objections might be heard at the Epiphany session, and the bench might then determine for or against an inclosure.

Those who doubt the competency of a court of quarter-sessions to do this business properly, will consider that the local information, so essential to the proper framing an inclosure bill, may be obtained, and the objections of parties aggrieved may be investigated, not only much *cheaper*, but much *better* on the spot, than can possibly be done before parliament. And those who think it would be giving *too much power* to justices of the peace, will consider, that they have already a greater power than this, viz. the hearing and determining appeals that may come from parties aggrieved, under inclosure acts passed by parliament.

And, indeed, if it were thought necessary, all possibility of partiality might be prevented by prescribed rules and regulations, as to the *proportional majority* of consenting proprietors, absolutely necessary to the passing an order for an inclosure.

It may, perhaps, be expected by some, that in speaking of obstacles to improvements in agriculture, the payment of tythes in kind should be mentioned, and some plan proposed for its abolition. But it is not to be expected that so great an alteration

tion in the policy of the kingdom, involving so many valuable interests and important consequences, can be effected from the crude and undigested schemes of an humble individual. The Board of Agriculture may, perhaps, hereafter be able, from the combined information that will be collected by them, to determine whether any thing can be done in this important business, and what measures are the most likely to give general satisfaction to the parties interested.

But however the payment of tythes, in kind, may be an obstacle to the agriculture of the kingdom in general, it is but common justice to the clergy of the *county of Wilts*, to remark, that *so far as respects them*, that obstacle can hardly be said to exist. In many of the late inclosures, commutations, either in land or money, have been accepted, and the parishes discharged of tythes. And where tythes are still due, it is a fact, that there is scarcely one clergyman in twenty throughout the county, who takes them up in kind; although the laymen, who are in possession of tythes, too often set them the example of refusing to compound them at any price whatever.



ARTICLE VIII.

Extracts from a “General View of the Agriculture of the county of Gloucester; with observations on the Means of its Improvement; drawn up for the consideration of the Board of Agriculture and Internal Improvement.”

[By Mr. GEORGE TURNER, of Dowdeswell.]

THE county of Gloucester contains, according to Bowen's map, about eight hundred thousand acres of land.

In describing the agricultural state of the county, it will be necessary to notice separately, the districts differing in soil and management. I begin with the

COTSWOLD HILLS.

The Soil—is various; the greater part, what is here termed “stone brash,” a loam intermixed with stones, on a subsoil of calcareous rubble or rock: the average depth of ploughing not much exceeding four inches: there is however some quantity of stiff sour land interspersed on these hills, many farms and one or two whole parishes are chiefly of that nature. Near Fairford and Cirencester the soil is richer and deeper; particularly about the former a deep and sandy loam prevails, producing great crops in a favourable time, but apt to burn and parch

parch up in dry seasons; at which times they likewise labour under great inconveniences for want of water, with which the greater part of these hills is abundantly supplied.

" *The Properties* are mostly large, and the occupations likewise; there are however some exceptions in both; but it is the opinion of experienced men, that farms of from 200 to 500 acres, can be managed with much greater advantage to the farmer and the publick, than smaller ones.

In the vallies, and where the land is of a sufficient staple for permanent meadow and pasture, it is mostly in that state. Sheep and cow downs are likewise frequently met with; but the quantity of land thus employed, bears but a small proportion to what is occasionally under the plough; some few parishes on the sides of the hills, however, are an exception to this rule, in which perhaps half the land is meadow and pasture, worth from 20s. to 30s. per acre. In these situations, dairying is mostly followed, in preference to grazing; the sort of cows chiefly Gloucestershire, frequently crossed and improved from other breeds.* Most farmers dairy a little for home consumption; and though the nature of the soil renders sheep the live stock chiefly to be attended to, yet a sufficient quantity of cattle

* With what breeds, chiefly; and what particular one is supposed to make the greatest improvement?

generally

generally is, and always ought to be, intermixed with them to improve the pastures, and make the most of the keep; of these not so many are bred as formerly, Gloucester market weekly affording great choice from Herefordshire, Wales and Somersetshire; of these, the Glamorgan and Somerset appear most eligible as working cattle for the hills, being active in harness, and when turned off, feeding in less time than the larger breed of Herefordshire. In stall-feeding, hay, chaff, barleymeal, oats and bran,* are the articles of food chiefly used. The smaller Welch breeds of cattle, where grazing is the only object, are frequently bought in in winter or early in spring, and fattened in the course of the summer, so as to go off between Michaelmas and Christmas with little or no hay, which, in a country where it is so scarce and valuable, is a material object.

The native *sheep* of these hills in their unimproved state, was a small light carcassed, polled animal, bearing in the memory of an experienced

* If a mill could be invented to grind wheat, either by the wind or with a horse, cheap and durable, it would enable the farmer by mealing his own grain, to obtain a quantity of excellent food for his fattening stock, to the great enrichment of the land. The great objection to the steel mills hitherto invented, is, that the corn must be in the very best order, otherwise it clogs and will not grind properly. To make a machine of this sort complete and generally useful, there must probably be some ingenious contrivance to dry and harden the corn if necessary.

agriculturist now living, a fleece of fine wool of about 3lb. weight; but lighter and finer before that period. They were cotted in former times, but that practice has not been in use since the remembrance of the person alluded to, from which circumstances it is very probable that the assertions of ancient authors, that the Spaniards procured their breed of fine-woolleyed sheep from the Cotswold Hills, are founded in fact, though contradicted by some modern writers. Since that time the inclosures and better management taking place, and good rams being procured from Warwickshire and other counties, the Cotswold sheep have considerably improved in weight of carcase and quantity of wool, which, though coarser than formerly, is in very great esteem as combing wool, being of a good length and very mellow quality. The fashionable Leicester sheep have been occasionally introduced into this district, and, for a cross or two when chosen with judgment, have been found to improve the breed in shape and disposition to fatten, but where persisted in, they have greatly reduced the carcase in size, and considerably lessened the wool in quality and quantity: nor is this reduction in size recompensed by their requiring less food, or fattening quicker than the other breeds, qualities which have been so strongly insisted on, and on which the merit of the breed has been chiefly founded; on the contrary, experienced graziers in

this district, who have paid particular attention to them, are convinced, that they require full as much time and room as the larger native breed. I say nothing of the comparative value of the carcases to the butcher, nor of the estimation the meat of the different breeds is held in by the consumer; the most satisfactory intelligence on these heads may be obtained in Smithfield market.

In the common practice of the district the wether sheep are fatted off from two to three years old. The average weight of carcases, ewe 22lb. wether 26lb. per quarter; fleeces on an average of the whole flock run four to the tod of 28lb. Wool sold this season [1794] from 14s. to 24s. per tod. I understood at this time it is not worth more than 18s.

Wether sheep, by keeping them another year, are frequently brought to weigh from 40 to 50lb. the quarter.

Probably no part of the kingdom has been more improved within the last forty years, than the Cotswold Hills. The first inclosures are about that standing; but the greater part are of a later date. Three parishes are now inclosing; and out of about thirteen, which still remain in the common field state, two I understand are taking the requisite measures for an inclosure: the advantages are great, rent more than doubled, the produce of every kind proportionably increased. In the open field state, a crop and fallow was the usual course. What is

here.

here called the “seven-field husbandry” now generally obtains; that is, about a seventh part sainfoin, and the remainder under the following routine; turnips, barley, seeds two years, wheat, oats. A part of the wheat stubble is sometimes sowed with peas, but generally more with a view to home consumption than for sale, that crop being very precarious, if often repeated. Vetches are likewise frequently, though not so often as they should be, substituted for the oat crop, to be eaten on the land with sheep, or mowed for horses and other stock. The management of the crops requires to be more particularly described.

Sainfoin.—This district stands one of the first in the cultivation of this excellent grass; the usual management has been to sow it with barley, after turnips, three bushels per acre, to which is generally added about five pounds of trefoil, which generally improves the first year’s produce, and by occupying the soil, prevents the weeds from getting a-head till the sainfoin has established its roots. There are some very superior managers; however, who, having been induced from an accidental occurrence to think a different procedure would be more advantageous, tried it with so much success, that they have constantly adhered to it since. The method alluded to, is to sow it on land exhausted by repeated cropping and full of couch grass; the sainfoin rooting so deep, does not draw its nourishment

like corn from the surface soil, and therefore is not injured by its impoverished state, whilst its greatest enemy, the black bent, is effectually kept under by the couch grass. In this practice it is likewise sown with barley, and very thin, not more than a bushel per acre, it having been noticed by the same attentive observers, that, when sown thin, the roots are larger and more vigorous, and in two or three years get full possession of the land, producing greater crops, and lasting longer than the thicker planted. There are other practitioners who object to thin sowing, observing that the hay being chiefly wanted for sheep, although it may produce as much or more in quantity, the stems are much larger and not so palatable to that animal, occasioning great waste in the consumption. It must likewise be observed, that the method of sowing it on foul exhausted land, having been tried in the neighbourhood of Gusting, on a less genial soil, has, in two instances that have come to my knowledge, failed; it might therefore be advisable, when the culture is new, to make small experiments first. In the neighbourhood of Stowe, I am informed, a fourth part of the land is appropriated to this grass; but as it requires a great many years to intervene before land that has once borne it, can be cropped with success, that probably may be found too large a proportion. The duration of sainfoin depends a great deal on the management; mowing it before its

its full blossom is detrimental, the roots bleeding very much and mildewing; for the same reason seedling of it is accounted beneficial; if wished to last, it should never be fed but in the months of October and November, and then only with cattle, sheep biting too close; the lattermath is, however, excellent food for weaned lambs, and therefore often applied to that purpose. Indeed the farmers in general do not wish it to last longer than seven years; the land being in that time thoroughly rested and fit for corn, whilst other land under the plough wants rest; but if desired, it might, with proper management, last ten or twelve years. The hay, if well made, is, in the fore part of the season, equal to any meadow hay in the district for most purposes. When worn out, so as not to be worth mowing, it is generally pastured a year or two, which thickens the turf, and of course produces more and better ashes, when pared and burnt, in which method it is always broken up.

Turnips—in the usual practice, succeed oats; the stubble is ploughed in autumn or the beginning of winter, in which state it lies till spring seed time is finished, when, being well dragged, it receives two or more ploughings, if necessary, with sufficient dragging and harrowing between, and allowing as much time as possible between each operation, for the seeds of weeds to vegetate and be destroyed. The dung of the farm-yard is chiefly applied to this crop.

crop. They are sown from the latter end of May to the beginning of August, and once or twice hoed, according to circumstances. They are eaten off with sheep; always beginning at the lower part of the ground, and working up hill; plenty of hay is allowed, which in this district is necessary for the health and well-doing of the animal. Turnips, thus expended, greatly enrich the land, and are found of use through the whole course of crops.

Barley—is sown after turnips, on one ploughing, as soon as the peas and oats are got in the ground. Grass seeds are either sown before the last time of the harrows, or after the barley is come up, and before rolling it; in which case it is usually covered in with a bush hurdle: quantity of seed three bushels; average produce twenty-four bushels per acre.

Grass seeds—chiefly sown, are from two to six pecks ray-grass, and from five to ten pounds trefoil; likewise a small quantity of broad and white Dutch clover; but the light land is apt to tire of the broad clover, if often sown in quantity; and the white Dutch is getting out of repute for sheep feed. In the common practice the seeds are mown for hay, the first year, and grazed the following summer, when the land is ploughed up for wheat.

A very valuable sort of *ray grass*, which has been cultivated for twenty years past, by Mr. Peacey, of North-Leach, deserves particular mention. Perhaps there is no grass existing more valuable to the stock

stock farmer than this, if properly managed; it is very early, and affords a great quantity of excellent keep before any other pastures will carry stocks: a ground of it, sown the preceding Michaelmas, kept eight ewes with their lambs per acre for one month last spring, before any other pasture was ready for them. It is very nourishing, and grateful to all kinds of stock; as may be seen where they have a choice of that and other pastures to run in, the natural pastures will be quite neglected, whilst the ray grass will be pared close to the ground: indeed it requires to be hard stocked; for if suffered to get a-head, it is neither so palatable nor nourishing; it is equally excellent for hay, if cut just as the ear appears, and before it is fully formed; in the autumn, it likewise affords a great deal of keep. It rather improves with age, and has been found particularly advantageous in laying land down to permanent pasture. It has not been a general practice, with the farmers on these hills, to raise their ray grass seed; the deficiency of natural pastures, and the large flocks of sheep kept, making the lays valuable both for hay and pasture; this has occasioned rather a scarcity of seed of late years, and been the means of introducing very inferior sorts from other countries, of which some have proved strictly annual, producing a tolerable crop the first year, but dying away the following winter; whilst that of longer duration has been found very unproductive,

productive, particularly all the latter part of the season. The great loss and injury sustained by these failures has made the farmers more attentive in their choice of seed, and greatly advanced the price of that which can be relied on; so that Mr. Peacey seeder an unusual quantity last year, to answer the demand which he foresaw he should have for it; it is already engaged at the advanced price of half-a-guinea per bushel, which price was fixed on it by some gentlemen who had experienced its value, and thought it would not only properly reward the attention which had preserved so valuable a grass, but be the means of making it more generally known, and encouraging the culture of it, to the exclusion of all the interior sorts. Mr. Peacey has likewise cultivated the orchis grass, a broad-leaved grass, that springs directly after the scythe, in mowing grounds; he finds this very useful on barren land, that will bear no other grass. A bank of this description adjoining his downs is covered with the orchis grass, and from the stock lying on it, and paring it down; it seems very palatable to them.

Wheat.—The method of sowing this grain in the district under notice, is rather singular. The land is ploughed from two to six weeks before sowing, as circumstances permit; if it gets quite grassy, it is thought better. The first rain that falls in August in sufficient quantity to thoroughly soak the land, begins the seed time; from thence to the middle of

of September is thought the best time. The seed is dragged in with heavy drags, working the land till the furrows are well broke, but rather wishing to leave it rough than otherwise; if frequent showers fall during the dragging in, so as just to allow the drags to work, it is thought better by most people. Experienced men say that our land, being naturally too light for wheat, is by these means rendered more suitable to it, at the same time that weeds are very much checked, which is a very material object where the corn is so long on the ground. I have seen adjoining lands, the previous management of which had been exactly similar the one part sown wet; produced a very good crop for the country, and quite clean; the other, sown dry, was not half so good, and devoured with filth. This method is practised on the dry sound loams, of which the district chiefly consists; on the heavier soils, attention is paid to the state in which they work best: the stiff sour land is frequently fallowed and dunged for wheat, over which broad clover is often harrowed in; in spring, after lying one or two years, it is broke up for wheat, followed by oats; or sometimes oats are sown on the lay, according to the state of the land. Turnips are sometimes sown on this sort of land, but perhaps had better be omitted; the poaching, in eating off, possibly doing more injury than the teeth of the sheep recompenses, rendering it unfit for any crop

crop but oats, and probably injuring them. Wheat, clover, and oats, seem to be the crops best adapted to these soils. Cabbages are not known here in field culture, and probably these kinds of soils would require more dung than the situation could command to cultivate that plant to any advantage. It may be right to notice, in this place, an error of Mr. Marshall's in his *Rural Economy of Gloucestershire*, vol. ii. p. 33. He represents the Cotswold farmers as "wishing to plough for every crop when the soil is wet, and working even their fallows when they are moist." This mistake originated, no doubt, from the account given him of the wheat process, as just related. The fact is, the farmers here are as desirous of working their fallows in dry weather, and find the same good consequences resulting from it, as in other districts. Attention is likewise paid to sowing the barley in dry weather. The old adage respecting pease, "if you sow in a flood, they will come up in a wood," seems verified on this soil; as for oats, their hardiness requires no particular nicety. Such an error is very excusable in an account which is only given in an excursion. Mr. Marshall's account of this county contains much valuable information, and has greatly shortened mine.

Oats.—The wheat stubble is mowed, if worth it, or otherwise harrowed, when it becomes brittle enough to break off, and carted to the fold-yard; and

and the land ploughed, as soon as leisure and the weather will permit, for Oats, which are harrowed in as soon as the land will work; in February, about four bushels per acre, average produce 24 bushels.

Peas are sown as early as possible in spring, the sort mostly in use is the early Burbage; they are generally ploughed in under furrow, about five bushels per acre, average produce twenty-four bushels.

Winter Vetches are, in the practice of a few individuals, sown in quantity to eat off with store sheep; they are usually sown after wheat, as soon after harvest as opportunity allows. The sheep are put on them the latter end of May or beginning of June. They are commonly hurdled off in the same manner as turnips; but if a bulky crop, the better way is to give them through rack hurdles, which are made the same as the common five-railed ones, only leaving the middle rail out, and nailing spars across at proper distances, to admit the sheep to put their heads through. A swarth of vetches being mown across the lands, a sufficient number of these hurdles, allowing one to five sheep, are set close to it; at noon the shepherd mows another swarth, and throws it to the hurdles, and the same at night; next morning, a swarth being first mowed, the hurdles are again set; thus moving them once in twenty-four hours; by this trifling additional trouble, the vetches are clean eaten off, and the land equally benefited. As fast as the lands are cleared,

they

they are ploughed and sown with turnips, in which way good crops are often obtained in kind seasons, on land cleared in tolerable time, but it cannot be depended on for the main crop. When a succession is wanted, spring vetches are sometimes sowed; but at the time they are sown, labour is more valuable, and besides, they are not so much to be depended on.

Manures are chiefly those of the fold-yard. The wheat stubbles are frequently mown or raked for litter, and cattle kept in sufficient quantity to eat the straw, but this is not always the case; large heaps of straw are seen in some parts of the district, rotting at the barn doors for want of cattle to eat and tread it into dung, and this generally for want of a sufficiency of pasture to support the stock in summer; but surely the keeping more land down to grass, or raising some sort of vegetable food for such stock, would be ultimately attended with increase of produce and profit to the farmer, and advantage to the publick. The formation of the fold-yards, so as to prevent the rain water from washing the dung heaps, as well as preserving the liquid part of manure, is not at all attended to, though so much deserving of attention; on the contrary, from the sloping situations of many of the fold-yards, it might be imagined, that the prime object in laying them out, was to diminish the value of the dung-heaps as much as possible. Ashes from burnt turf,

or

or grassy stubbles, are very beneficial, and such land is usually broken up in that way. Lime is too expensive for manure; nor, from two or three experiments that have come under my observation, does it seem worth attention, if that were not the case. Soot has been tried on fainfoin to great advantage, but it is not to be procured in sufficient quantity for any considerable practice. Marl has been formerly used in different parts of the district; a pit has been opened of late years in the neighbourhood of North-leach, to the great improvement of some adjoining grass grounds. Folding sheep is very little practised or approved of. The observations in the Annals of Agriculture on that practice, are well deserving of attention.

Watering meadows has long been practised in this district; there is, probably, no considerable quantity of land capable of that improvement, without interfering with the mills, where it is not done.

Implements of husbandry.—The waggon of this district is described by Mr. Marshall, and by him allowed to be the best in the kingdom for husbandry uses. The testimony of Mr. Drake, given to the Worcestershire surveyor, tends to confirm that idea. The carts are very good for hauling out dung, but not so well calculated for road work and other uses. The ploughs are long in the beam, with one wheel; they are rather improved in their construction of late. Four horses, or four or five oxen, the most usual

usual draught; in spring seed time and stirring fallows, generally less. It is most probable ploughs might be invented to do the work as well with less strength; but the land in general being a tenacious loam, full of stones, is more tiresome to the cattle, and requires more strength than would seem necessary on a superficial view.

Horses and Oxen are both used, the latter in harness, and getting ground, but not so much as they ought. One team of horses is necessary for carrying out corn on our rough and hilly roads, but where more than one team is kept, oxen certainly are in every respect the most eligible. Where the farms are large or not handy to the home-stall, a wooden house, fixed on a sledge, is used to hold the ox harness, which being drawn to the ground where the beasts are pastured, and as convenient as can be to their work, saves a great deal of time and unnecessary travelling. The same cabins, if made with sparred bottoms and lids to open on each side, are very useful occasionally to keep fattening calves in.

Farm-Houses and Offices, in the old inclosures, are frequently unhandy and inadequate to the farms annexed to them, which doubtless arises from the improvements in husbandry since their building. In the new inclosures, they are generally speaking very conveniently situated, with sufficient shed-room for cattle implements. In the modern improved method of inclosing, it is thought best to divide the arable

arable part of the farm into seven inclosures of equal size, being the number required for the most approved course of crops, allowing two or three smaller patches near home for odd purposes.

The fences are usually dry stone walls, good quarries of which are generally very handy. Quick hedges are sometimes planted, but the attention and time required to raise them is a great objection. In one or two instances they have been planted within side the walls with great success—it is a pity the practice is not more general.

Population is supposed to have increased on these hills of late years, and it is generally believed that inclosures, by finding more employment, tend very much to promote, at least, useful population. The small-pox frequently makes great ravages in the country—it is a pity a general inoculation did not take place every five or six years, which would be a great saving in expence to the different parishes, as well as the preserving many useful lives.

Prices of Labour are considerably increased; from 12d. to 14d. a day in winter; 18d. to 20d. haymaking; harvest 2s; beer or an allowance in malt, in some places, is gaining ground, and as much as possible is done by the great. Women from 6d. to 8d. and 9d. in haymaking; in harvest 12d. Hours of work from six to six, when day-light permits; late hours in haymaking and harvest generally recompensed with beer, &c.

The Value of Draining, has been long understood and practised in this district, old drains of wood and stone being frequently met with in making new ones. A great deal has been done of late years; there is still much to do; but some of the stiff sour land that most wants it, is of so retentive a nature, that the drains will not draw to any considerable distance. Probably Mr. Elkington's method, as mentioned in the Annals of Agriculture, vol. xvi. page 544, might be beneficial. The chief material is stone, the methods of doing it vary, but have nothing new from those described in different parts of the Annals. Probably digging the trenches sufficiently deep, and filling with stone where it is handy, will be found the most cheap and lasting method. In doing this the largest stone should be put in first, and the surface levelled with smaller ones, sprinkling a little straw on the top, to prevent the loose mould from getting between; or for want of that, the grassy sides of the sods turned down will answer the same purpose.

Paring and Burning is very much practised and approved; old sainfoin lays, and all turf of a sufficient texture, are usually broke up in that way. Turnips are often the first crop; and from the freshness of the land, and the good effects of the ashes, a large crop is generally obtained. But as the time is too short to get the land in proper tilth for the succeeding crops of barley, seeds, &c. it is thought

thought a better method to sow wheat first, on one ploughing; after which, the ashes being still fresh in the ground, a crop of turnips may be as safely relied on, and there is plenty of time to get the land in compleat tilth. Grassy wheat-stubbles, that will produce a tolerable quantity of ashes, are frequently pared and burnt for turnips with great success. In short, whenever followed with the turnip and clover husbandry, its good effects are indisputable; but like every other practice, it is liable to abuse in the hands of designing men, who have sometimes made use of it to force repeated crops of corn, till the soil has been compleatly worn out and rendered incapable of any useful production.*

Coppices are very much wanted in this district. Ash thrives remarkably well on this soil, and is very useful for hurdles and gates, as well as for fuel, which is a very scarce article; the coppices we have are chiefly composed of this wood, which is fetched from a great distance for coopers and other uses; and has greatly risen in price, as well as got scarcer of late years, so as to cause serious apprehensions in some parts of the district, of great inconveniencies for want of a sufficient supply of this

* Down-Ampney and its neighbourhood, the part of this county that borders on Wiltshire, is the only place in which I have met with any objections to this management; the soil here consists of stiff clays and gravels; on the clays they do not think it answers, but approve of it on the gravels.

useful article. It is a great pity that every estate had not a sufficient quantity planted to supply the tenantry and labourers dependant on it. Odd corners and four patches, of little use under the plough, might be very profitably applied to this purpose; in boggy ground, too wet for the ash, the alder thrives well, and is very useful for gates, hurdles, and other common purposes. It has been found that ash will not grow on the tops of the hills, though it thrives very well on the slopes; but there are a great many such situations in this district, which if planted with Scotch firs, beech, or any hardy trees that would grow, would add much to the beauty of the country, as well as greatly improve the soil and climate of the adjoining land, by the shelter they afforded. The chief woodlands are in the parishes of Chedworth, Withington, and Dowdeswell, smaller patches in Guiting and one or two neighbouring parishes; these are looked on as the natural production of the soil, protected and encouraged of late years. They are cut at about 18 years growth, and produce from 30l. to 60l. per acre. There are some coppices consisting chiefly of ash, in the parishes of Wick and Slaughter, that have been planted in modern times; they are first cut at 10 years growth; afterwards generally at about 18 years growth, and produce from 25l. to 60l. per acre. Great attention is here paid to keeping them clean, by hoeing for two or three years after cutting, till the

the young shoots are sufficiently strong to smother the weeds. Alder coppices are cut at 12 years growth, and are worth from 15*l.* to 25*l.* per acre.

Leases.—I know of nothing commendable in the leases of district; a good plain form, equally protecting the interest of landlord and tenant, is much wanting, if possible to be drawn. At present they are chiefly in professional hands, who either content themselves with antiquated copies, or, in order to guard against trifling inconveniences, cramp the industrious tenant, so as often to prevent improvements to the advantage of himself, his landlord, and the community; whilst, at the same time, they do not prevent the knave and sloven from running into the contrary extreme.

It has already been noticed, that this district has been greatly improved of late years; it is still improving, nor is any spirit of that sort wanting; but it might be greatly assisted by the removal of some of the burthens that the farming world in general labour under. Among these, the payment of tithes in kind deserve to be mentioned. In the new inclosures, this load has been got rid of by giving up a part of the property in lieu of it. One-fifth of the arable, and one-ninth of the pasture, and in some instances, two-ninths of one, and one-eighth of the other, has been asked and agreed to. As the proprietor is exonerated from all expences, except inside fences, the part that he takes is more than

equal to a fourth of the arable land, even when one-fifth is allowed; but even then the improvements being entirely the proprietors, they have been obliged to acquiesce. The acts of parliament allow the rectors only to lease for the first twenty-one years, and afterwards the tenants remain tenants at will; in consequence of which, all the lands set apart for the clergy, become in a great measure unproductive, as the tenants take from them all they can raise, and set every improvement aside; and therefore they are so far neither beneficial to the clergy or the nation. But were commissioners appointed to value the tithes of the parishes, and also the landed estates of the clergy, and were they obliged, under that valuation, to grant leases at the rent then set on them, their estates would be improved in proportion as other lands; and the tithes being secured to the occupiers for a term, not exceeding twenty-one years, they could have no objection to the advance to be made on them at the expiration of that term, and the difficulties now existing would be done away in so far as respects the occupiers and the nation. The rent to be paid for the land would be of no consequence in what proportion it was paid, as the only security requisite to the occupiers is, that on laying out their capital they may have from the impropriator an equal term with that they have from their landlords, and to put both on an equal footing. As

the

the law now stands the burden may be immoderate, and therefore to every person acquainted with the value of money (which the farmers are now more than formerly, and know how to make calculations) it cannot be expected that they will lay out any considerable sum, when the first 11 per cent. profit goes to the impropriator, before they can receive any advantage themselves: and, in case of a loss, that loss is augmented by the impropriators taking a tenth part of the capital laid out, as far as it was returned to the occupiers.

THE STROUDWATER HILLS.

THE soil on these hills is chiefly light loam; not so tenacious as the Cotswolds, nor so productive; there is likewise some quantity of sour wet land; the climate is nearly similar to the Cotswolds; the properties are various, as is the size of the farms. On the hills, strictly speaking, it is supposed, nine-tenths of the land is arable. The approved course of crops, the same as before noted of the Cotswolds. On the vallies there are large tracts of good meadow land, which is applied both to grazing and the dairy; but mostly the latter. There is some quantity of land watered, and a great deal more is capable of that improvement; but the mills interfere greatly; for the dairies the cattle are chiefly bred,

bred, and are in general good ; in grazing, the stock is more generally bought in, and are of various breeds, according to their application, the opinion of the grazier, and the goodness of the land.

Sheep, on the hills, are the chief stock ; these are mostly of the horned Wiltshire breed, the fleeces average nine to the tod of 28lbs. worth this year 26s. 6d. per tod. Average weight when fat, wether 24lbs. ewe 22lbs. per quarter. This breed is liable to a disorder called the Goggles, which sometimes occasions very heavy losses. The only method of prevention is, entirely changing the flock once in eight or ten years. One practitioner, Mr. Hayward of Beverstone, has been induced, from this circumstance, to try the Cotswold breed, and having for three or four years past, used rams of that breed, he will very soon entirely get rid of the Wiltshire blood ; and I am inclined to think, will find a great advantage in so doing.

The Rotation of Crops, it has been observed, is similar to that on the Cotswolds. I saw here an application of turnips quite new to me. Mr. Hayward gives them in quantity to his farm-horses, which he finds keeps them very healthy, and induces them to eat the barn chaff and other dry meat with a better appetite ;—they were, when I saw them, in very good condition, though I was informed they had had no corn for half a year past, and were constantly worked. The Cotswold farmer

can seldom procure turnips in sufficient quantity for such an application, nor would he chuse to deprive his land of the benefit derived from their being eat on it by sheep, except the crop was very heavy, in which case, perhaps, they might be advantageously thinned a little for this purpose, or for fattening cattle in stalls. This gentleman, and his neighbour Mr. Tugwell, cultivate the turnip-rooted cabbage. Mr. Tugwell's crop is very fine; they are transplanted on to ridges, formed by a *bout* of a double mould-board plough of his own invention; he finds they will not flourish with him, without transplanting. This crop comes to perfection when the turnips are all spent, and supports a great stock just in the scarce time of spring, which makes it particularly valuable. Mr. Tugwell has likewise cultivated the Root-a-baga, which he does not at present approve of, but means to give it farther trial.

This gentleman is the inventor of the two-horse plough, which has been honourably noticed in the Transactions of the Bath Society, and which I understand he is now requested by them to draw up a particular account of. I saw several of them at work in a ground of Mr. Hayward's; they seemed to go very easy to the horses, and made very good work. Mr. D. Hayward informed me that in a trial of ploughing among some neighbours, they ploughed an acre of clover ley, with one of these ploughs and a single horse, in six hours. These

ploughs

ploughs have been tried on the Cotswold hills; but the persons who tried them never entertained an idea, that the horses could go in them for eight or nine hours without baiting, as is practised here; and the introduction of the Norfolk custom of baiting at noon and working later in the evening, though by no means a bad one, yet being new to the country, was attended with so many difficulties as to discourage the use of them.

The double mould-board Plough is very clever, and seems well calculated for the purposes it is designed for. Mr. Tugwell uses it to make the water-furrows on his land. His manner of doing this on fidelong grounds, is well deserving attention. Instead of furrowing down the slopes in the usual way, he draws his furrows across, but inclining sufficiently with the declivity for the water to draw off, by which means every part of the ground is thoroughly and equally drained; and the bottoms of some of his grounds, which, in the common method, were poisoned with wet from the upper part, being now laid quite dry, are become the most productive parts of the fields.

This gentleman is likewise constructing a roller, which promises to be a very useful implement.

I saw two rollers in this neighbourhood, on a construction new to me; one of them was procured from the neighbourhood of Marlborough—a common] roller of about fourteen inches diameter, surrounded

surrounded with wheels nine inches distant from each other, and three feet in diameter; the spokes being let into the roll. The other is an improvement from this; a smaller roll is the axis, on which are put solid wheels, about three feet in diameter, and one-half inch thick, made alternately of wood and cast iron: the wooden ones are made to fix at any distance; between two of these an iron one is put one-half inch less in diameter, and with room sufficient to play up and down, so as to give way to any obstacle, and to press down into the hollows; it likewise, by these means, is rendered less liable to choak up in rough land. For breaking clods, or in light land, where great pressure is wanting, these appear to be very effective implements.

There appears to be a great deficiency of shed-room in this district. Implements of husbandry of all sorts are either left in the grounds where last used, or at best have only the shelter of a tree to preserve them; nor are the yards much better accommodated for wintering cattle. This is a very material object; the injury sustained by having the implements thus exposed, is, perhaps, more than equal to the fair wear of them, and would well pay for the construction of sheds for their preservation. In regard to live stock, it is still worse; cattle fed on straw, in exposed and unsheltered situations, are sure to sink considerably; and are liable, when spring comes on, to the yellows and other complaints,

plaints, which greatly injure, and sometimes prove fatal to them. Dairy cows in the open fields, down in the vale, are known to sink very much in bad winters, though foddered with good hay. On the contrary, where good yards are constructed, with plenty of shed-room, and attention is paid to littering them down occasionally, and keeping the cattle dry and comfortable, they sometimes even improve on the straw, and are sure to come out healthy and thriving in spring.

The land is chiefly in an inclosed state; but in some instances, additional partitions are wanting; the fields being too large for the proportion of the farm for any particular crop, which is attended with great inconveniences; some open fields remain, but are fast disappearing. Inclosures have been uniformly attended with great advance of rent, and increased produce.

The Woollen Manufactory is carried on to great extent in this district; the fine trade is at present at a stand, but the coarse for army clothing and the East-India company remarkably brisk. The introduction of machinery, for every process the wool goes through to the loom, has thrown many hands out of employ; and several gentlemen, I have consulted, attribute the enormous rise [of] poor rates entirely to that cause; these, I have been credibly informed, amount in some instances, in the immediate vicinity of the manufactories, to six shillings in

in the pound and upward yearly. But I am inclined to ascribe this heavy burthen on the landed interest, more to the vicious and profligate habits of the weavers, who can, if good hands, earn a guinea and a half a week; which, supposing, the carding and spinning machines to have deprived the women and children entirely of employment, is certainly sufficient, properly laid out, to maintain their families comfortably. But the misfortune is, these earnings very seldom find their way home, but are wasted in a publick-house, whilst the families are clothed and fed at the expence of the parish, and the men themselves, notwithstanding their great earnings, are ragged and miserable in appearance; and in the event of a week's illness, or a temporary suspension of the particular branch of the manufactory they are bred to, are reduced to the greatest distress. This evil is not peculiar to the clothing manufactory, but is common to all I have had any acquaintance with; it is a complicated evil, and, if capable of any remedy, requires a much abler pen than mine to point out the means.

N. B. These last remarks on manufactures and poors rates, are in substance a repetition of what the ingenious author had before made on the same subjects, in his account of the former district, and therefore may be considered as applicable to all parts of the county where the manufacture is carried on. The truth of them may be liable to controversy from persons in particular situations; but much truth

truth will be allowed to attach to them by others: and they are certainly worthy of very serious consideration, from all intelligent friends of general order, morality, and happiness.

ACKNOWLEDGEMENT TO THE BOARD OF AGRICULTURE.

THE foregoing extracts are made by the obliging permission of the BOARD OF AGRICULTURE, from the surveys of the three counties of Dorset, Wilts, and Gloucester, which, with the county of Somerset, constituted the original bounds of the "Bath Agricultural Society." The survey of the latter county not being yet completed, cannot be noticed in this volume; but what has thus been, by the aforesaid permission, selected, was deemed a tribute of attention, which the Committee of the "Bath and West of England Society" was desirous of paying to parts of a district, to which the Society has owed so much cordial support, and on the improvement of which much solicitude has been bestowed. The Society, in common with every other patriotic body and individual, has reason to expect more abundant effects from the noble exertions of the BOARD; and from the condescending attention which this Society has experienced from an institution so extensive in its views and measures, it is hoped the amicable intercourse, so happily begun, will increase, and long continue, to the mutual satisfaction of the two bodies, and the lasting advantage of the nation at large.



ARTICLE IX.

On the abuse of SPIRITUOUS LIQUORS;—its Effects on publick and private Property, and consequently on National Prosperity.

[By A. FOTHERGILL, of Bath, M. D. F. R. S.]

UNDER the head of Spirituous Liquors may be comprehended, not only those which are in common use, as brandy, rum, gin, &c. but also the more costly compound waters, or rather spirits, as those of cinnamon, nutmegs, anniseeds, &c.

Spirits, though warranted as genuine, are, however, frequently adulterated, and consequently rendered still more detrimental to those who drink them. Thus, instead of genuine French brandy, we are commonly presented with a fiery malt spirit, corrected, as is supposed, with *aqua-fortis*. Yet with this counterfeit brandy, are often prepared the famous compound waters, tinctures, and choice cordials, so highly extolled for their superior quality.

Even gin, that favourite liquor among the vulgar, appears in reality to be a more vulgar compound than its votaries are aware of; for instead of a fragrant spirit of juniper distilled in Holland, their friends, the smugglers, take care to supply them with a vile, heating, ill-flavoured composition, brewed in England. Such at least, according to

an

an eminent chemist, is their “ Genuinc Hollands NEAT as imported ! ”*

Yet such is the rage for this detestable potion, that thousands of poor half-famished creatures daily swallow it with insatiable avidity. Though supported, together with their helpless families, at the expence of the publick, they have been often known to pledge their allowance of bread, their clothes, nay, the very beds they lie on, to procure their accustomed dose of gin !

If we descend into their comfortless abodes, what an affecting scene do we behold ! Disease, poverty, and wretchedness, pourtrayed in their strongest colours !

This deplorable abuse of spirituous liquors, then, is a national evil of the first magnitude, and is certainly more malignant in its nature, and more fatal in its consequences, than is commonly imagined. It not only disqualifies men for activity, and habits of industry, but totally deprives them of that honest spirit of independence, which ought to be their pride as Englishmen. The time misspent in riot and debauch, occasions a vast loss of labour, ruins the peace of families, and strikes at the very root of population. Men addicted to this vice have no idea of making provision for a family, or ambition

of earning more at their respective trades, than barely sufficient to buy the daily portion of spirits. This being the sum total of their wishes, or, in their own language, "their meat, drink, and clothes," which indeed is almost literally true, as they use very little of either besides.

This pernicious habit is highly injurious to publick as well as private property, and consequently to national prosperity. Among mechanics and tradesmen, it produces debts, disgrace, and bankruptcy. Among farmers, bad tillage, scanty crops, and universal bad management, such as fields and gardens over-run with weeds, broken fences, and half-clad dirty children, without manners or education.

Among servants and domesticks; idleness, extravagance, loss of character, and beggary.

In the year 1751, when the abuse of spirits had risen to an alarming height, the number of dram-drinkers in the kingdom of Great-Britain, according to a very able calculator, amounted on a moderate computation to 400,000, and he conceived it probable that they might considerably exceed that number!*

On balancing the account between the profits arising to government, and the damage accruing to the nation at large, he endeavours to prove that a

* Inquiry into the Effects of the Abuse of low-priced Spirits.
loss,

loss, little less than four millions, must yearly fall on the trading interest, the landed interest, and the revenue of Great-Britain. To pretend, says he, to shew which of these three are the least sufferers, would be a poor consolation: be it sufficient to observe, they must all jointly suffer. .

His statement of the supposed annual loss, it is to be observed, related only to the number of dram-drinkers *alive* at that period, which, though very great, perhaps did not exceed those of the present day. But if to this we add the damage which the nation sustains by the premature and untimely deaths of so many fellow-creatures, how shall we estimate the loss!—Supposing for the present, however, we only consider the loss of time, the loss of labour, and of money misspent in publick-houses; can we wonder that our parishes are overburthened with poor; that our prisons overflow with insolent debtors; or that our poor-rates, which long ago amounted to the enormous sum of two millions a year, should be rapidly increasing?

But is it not still more mortifying to observe the miseries of the poor, instead of being diminished, proportionably increased, and keeping pace with this daily increasing tax; while the poor of the surrounding nations are supported wholly without it! Is it not high time then, that some effectual check should be given to this alarming abuse of spirits, and that some more efficient, or œconomical plan

plan be adopted, which may prove more favourable to industry and sobriety?*

ITS EFFECTS ON THE HUMAN BODY.

THE chemists, who first discovered the art of obtaining from innocent ingredients a noxious intoxicating spirit, little dreamt that the disclosure of that

* Might an individual here presume to offer a few hints towards a better provision for the poor, the plan should, consist,

1st. In the establishment of **BENEFIT SOCIETIES** throughout the kingdom, upon a liberal and extended scale, comprehending all ranks of people, similar to what has been lately proposed by my ingenious friend Mr. Pew of Shaftesbury; but with some necessary alterations respecting the periodical subscriptions—the number of persons in a family, and the ability of the subscribers.

2dly. In the establishment of **HOUSES OF INDUSTRY** and **PENITENTIARY HOUSES** in the respective counties, similar to those excellent institutions which have long been so happily experienced in Holland.

3dly. In laying an **ADDITIONAL DUTY** on **ALL SPIRITUOUS LIQUORS**, amounting nearly to a prohibition.

4thly. In **REDUCING THE NUMBER OF PUBLICK-HOUSES**, and in **REFORMING VARIOUS ABUSES**, to which they are at present liable. By thus striking at the very root of the evil, might **POVERTY** itself in a great measure be prevented. Add to this, that a sum not less than two millions might be annually saved to the **LANDED INTEREST**, and finally the **POORS RATES FOR EVER ABOLISHED**.

Moreover, by this plan being once effectually carried into execution (for it certainly is by no means impracticable) might the health of the lower class of people be preserved—their morals improved—

that fatal secret, like the opening of Pandora's box, would instantly let loose upon mankind, such a formidable crowd of evils—evils for which not all their splendid discoveries—not all their boasted remedies would ever be able to atone! For had they sat down to study the surest means of destroying health and life, without making an open direct attack upon either, they certainly could not have devised a more effectual method, than by introducing to the ignorant multitude this fascinating poison, which at first, like a friendly cordial, cheers the heart and raises the spirits, while it secretly saps the constitution, and at length unhinges the whole machine!

War, that dreadful scourge of nations, while it continues to rage, commits indeed terrible ravages among a certain order of men; but population, continually going on, imperceptibly fills up the chasm, and repairs the waste.

But this Evil Spirit, like the destroying Angel of old, stalks through the land with a steady, though silent step; every where spreading its baleful in-

their industry rewarded. Should no means short of even a total prohibition of spirits be found effectual, what ought to be the alternative? Ought the mere acquisition of revenue arising from spirits, even for a moment, be suffered to stand in competition with the **HEALTH** and **VIRTUE** of the community? Or is there no method of supporting revenue, but at the expence of the more important interests of the nation—**POPULATION**, **PROPERTY**, and **COMMERCE**, the **GREAT SOURCES** from whence revenue itself is derived, and to which it ought ever to be subservient?

fluence over our cities and villages, sparing neither age, sex, nor condition! It sheds the dire contagion, not only amongst our poor infatuated soldiers, sailors, manufacturers, and day-labourers, but even communicates the infection to the tender mother, the affectionate nurse, and the helpless infant. It not only poisons the present generation, but even blasts the hopes of the next, by intailing disease, misery, and wretchedness, on their innocent offspring! Nor is this to be wondered at, seeing that the milk of unhealthy mothers or nurses, who are addicted to spirits, is peculiarly destructive to the tender frame of infants whom they suckle. Hence the number of puny, sickly children, who bear all the marks of shrivelled old age, prone to convulsions, and other fatal diseases, and who rarely indeed survive the first stage of infancy.

The Rev. Dr. Hales observes, that the mortality among young children, and the decrease of births, keep equal pace with the abuse of spirituous liquors; hence the striking difference in both respects between London and Paris, the habit of dram-drinking being vastly greater in the former than in the latter. In London, in the year 1750, the burials were found to exceed the christenings by 9,179

In Paris, in the same year, the christenings exceeded the burials by - - - - 951
Balance against London upon both articles in one year, - - - - - 10,130 Such

Such a degree of mortality of the infant species, unknown among the young of other animals, is surely an alarming circumstance! The account, however, only relates to children under five years old, exclusive of all that prodigious number of English subjects, above that age, whose lives are continually shortened by the same cause!

In tracing the effects of ardent spirit on the human body, we shall find that it exerts its pernicious influence first on the stomach, the inner coat of which is exposed to its full action. It soon deadens that exquisite sensibility of its nerves which gives the keen edge to appetite, so essential to digestion. But this important organ, from its intimate connection with all the noble parts, may be considered as the *key-stone* of the fabrick. By gradually destroying this, it undermines the very foundation of health, and, in process of time, lets down the whole frame. The liver next becomes diseased; for on this organ it seems to exert a peculiar specific power, and by injuring its texture, it interrupts the course of the bile, and renders it incapable of performing its functions.

From its action on those two important organs, its effects are propagated far and wide over the whole nervous system. It not only creates maladies peculiar to itself, but causes other diseases to prove far more complex, more dangerous, and more difficult to cure. Hence may be explained the nausea
and

and loathing, the sense of faintness and debility, the sinkings, languors, and horrors, which dram-drinkers so often experience; and why they so rarely survive the attack of an inflammatory or acute disease.

A small glass of ardent spirit forced into the stomach of certain animals, throws them into violent convulsions, and even a tea-spoonful injected into their veins, almost instantly deprives them of life! So immediately fatal are its effects when applied to the naked nerves, or blood vessels, that it may literally be pronounced a poison of the most dangerous and malignant kind! It is abhorred by the brute creation, who all, without exception, turn away from it with the utmost disgust. It is equally detested by man in his infant state, till his appetite is depraved by evil example, and his natural aversion subdued by the all-conquering power of habit. Since custom has rendered the use of spirits so familiar in this country, the evil is become epidemic, and the rage for strong liquors, like contagion itself, pervades even the most sequestered villages, insomuch that it is now become difficult even for the most abstemious persons wholly to escape.

It is with peculiar concern, however, that we find so many instances of it even among the female sex, who, from being once the patterns of temperance, and every thing that was amiable, are now reduced to infamy and contempt! A circumstance not less frequent

frequent than deplorable, especially among the lowest order of females! When women of better birth and education are innocently betrayed into this unfortunate habit, it generally happens from anxiety of mind, occasioned by the misconduct or cruel treatment of those of the opposite sex, who ought to have been the trusty guardians of their health and morals.

Another frequent, though unsuspected cause of this abuse, especially among the inferior class of women, is the immoderate use of tea. This relaxing beverage poured down hot, as it generally is, at least twice a day, tends to unnerve the female frame, and produce universal languor. The natural spirits being depressed, recourse is imprudently had to artificial ones, the property of which is, first, to wind up the springs of the animal machine far above their natural pitch, then suddenly to let them down as far below it: hence it is that each glass of spirits soon requires two more to obviate its own bad effects, and the remedy at length is discovered to be ten-fold worse than the disease!

Habitual dram-drinkers are not only short-lived, but contract a variety of diseases which embitter all the enjoyments that render life desirable. To enumerate their manifold sufferings would require a volume! Suffice it to observe in general, that the liver being obstructed, and the constitution enfeebled; they commonly first fall into a jaundice; this gradually

gradually slides into a confirmed dropsy, and this at length closes the fatal scene! Some few, who escape the jaundice or dropsy, contract gout or stone, while others are taken off by apoplexy, palsy, or insanity! For this poison, whether quick or slow in its operation, is always *sure* at the last. Some few hardy veterans, indeed, inured by degrees to a sort of regular intemperance, being, as they term it, *seasoned* by their liquor, now and then hold out longer than might be expected.

This however ought to afford but poor encouragement, to a life of intemperance, which, at best, is but to drag on a "*feverish state of being*," deformed by vice, and chequered with infirmities. Besides, it may well be supposed, that had these aged sots pursued an opposite course, they might have lived happily to a far more advanced period. For be it remembered, that where one of those through dint of constitution arrives at 60 or 70 years of age, thousands are cut off in their prime! But what is remarkable, this proves no warning to their boon companions, who continue to run the same giddy round, till, like leaves in autumn, they drop off one by one, to make room for their hopeful successors!

ITS EFFECTS ON THE MIND AND MORALS.

WINE, beer, and other fermented liquors, drank too freely, produce extravagant mirth and gaiety, ending

ending at length in drowsiness and stupidity. Spirituous liquors tend to inspire the more angry and morose passions, which often terminate in fury and outrage. The former brings on intoxication in a more slow, gradual manner; the latter seizes the brain almost immediately, without leaving time for recollection.

This material difference in their effects may be easily accounted for, if we consider that it is the spirituous part of liquors *only* that causes intoxication, and that this can never rise to such a height, when the spirit is in a tempered and diluted form, as when poured down in its ardent state, and unallayed. Hence double-distilled spirits, though ever so genuine in their kind, are more suddenly destructive than the weaker proof spirits. This potent poison, when taken in excess, soon deprives men of their reason, the only faculty that elevates them above the brutes. It overthrows memory, judgment, and all the intellectual powers, introducing a temporary phrenzy, or savage madness, which sinks them beneath the lowest of the brutal tribe. For it suddenly converts a rational inoffensive being into a fury, ripe for every species of mischief and extravagancy, which in his cooler hours he would contemplate with horror and amazement. It prompts him to wreak his vengeance indiscriminately, whether on his companions, or on glasses, furniture, and other inanimate bodies. As soon

soon as this fit of phrenzy subsides, stupefaction ensues; when he sinks down into a state of total insensibility, during which the mind remains a complete blank.—

What a humiliating spectacle is here! How fit to inspire compassion, contempt, resentment, and horror! Well might the Spartans exhibit their slaves in this terrible state of disguise, the more effectually to deter their sober youths from drunkenness. For in this unfortunate condition, man, lately the sovereign among the creatures, is suddenly transformed into the most helpless, odious, and disgusting animal in the creation!

Drunkenness, observe, is not to be considered as a mere simple vice, since in this one most others are included. Sobriety, the main guardian of virtue, being once banished, a direct avenue is opened to every species of vice. Of this an admired moralist relates an affecting instance. A certain amiable youth of distinguished virtue and sobriety, resolutely withstood every temptation which a set of profligate companions could invent to corrupt his morals, till one evening they contrived to make him drunk: the plot succeeded, perhaps, beyond their expectation. Heated with strong liquor, to which till now he never had been accustomed, he fellied forth in pursuit of adventure, and on that fatal night committed robbery and murder!

Persons addicted to spirituous liquors, by degrees lose all sense of honour, virtue, and religion. These ties once dissolved, they strive to stifle the voice of conscience with incessant drams. Having wound up their courage to a pitch of ferocity, they are prepared to engage in the most daring enterprize of villainy and outrage, without shame, fear, or remorse. Hence proceed blasphemies, robberies, conflagrations, and murders, attended often with the most savage acts of barbarity! Hence the black calendars which periodically issue from the Old-Bailey and other prisons, announcing the numerous executions which shock our feelings, astonish foreigners, and disgrace our national police!

SPIRITS—WHETHER ALLOWABLE ON CERTAIN OCCASIONS.

THE advocates for strong liquors, would endeavour to persuade themselves that spirits are not only useful, but absolutely necessary to fortify the system against the vicissitudes of our climate, and also to enable it to undergo hard labour. That this, though plausible, is a vulgar and dangerous error, is evident from numerous examples, not only among those of our own countrymen, who drink nothing but water, but also of entire nations who never taste spirits, and yet enjoy health and vigour
in

in a supereminent degree. At Constantinople, where the use of strong liquors is wisely prohibited, the Turkish porters, whose only liquor is water or lemonade, are observed to perform their laborious task with alacrity, and with firm step to sustain burthens under which our dram-drinking porters would reel and stagger.

The brave soldiers under the Roman republic, whose drink consisted of vinegar and water alone, traversed various climates in marching and fighting beneath a heavy load of armour. Yet they nobly sustained their fatigue, and even conquered the world, without the miserable aid of spirituous liquors. But it is observable, that when afterwards they became enervated by luxury and intemperance, they fell in their turn, an easy prey to the more rude and barbarous nations.

What has hitherto been advanced against the general *abuse* of spirits, is not to be understood as applicable to their *use*. Nor is it so much my object to move the passions of my readers, as to convince their judgment.

According to its use, a *poison* may be converted into a *medicine*, and a *medicine* into a *poison*. Genuine spirit, when converted into punch, affords a generous cordial, and is certainly preferable to the adulterated wines that are but too commonly vended. Here the spirit properly diluted with water, and tempered with a due proportion of the acid of the fruit,

fruit, and the whole perfectly combined by the intervention of sugar, loses its fiery quality, and becomes a *new liquor*, not only more palatable, but abundantly more wholesome, than when merely dashed with water alone. On urgent occasions therefore, and where such a cordial seems to be really wanted, as when a person has long been exposed to cold tempestuous weather, or exhausted by sickness, or bodily fatigue; a few glasses of warm punch may not be improper, in order to prevent a greater evil.

“ *Give strong drink,*” says King Solomon, “ *only to him that is ready to perish.*”

Such was the advice of the wisest of men, and happy would it be for mankind were it strictly pursued! Then would this odious vice soon be compelled to hide its hideous visage, and sobriety, the guardian of virtue, return once more to preside over our happy isle. Then would the rising generation be taught to withstand the allurements of the maddening bowl, and to temper the higher flights of conviviality with harmless mirth.

PLAIN RULES—WITH SERIOUS ADMONITIONS, FOR THE PREVENTION AND CURE,

If such then are the pernicious effects of spirits on public and private property,—on health,—on morals,

morals,—nay, on life itself, need any other arguments be adduced to inspire my readers with an utter detestation of a vice so disgraceful in its nature—so destructive in its consequences! On the contrary, may it not be hoped that, by this time, it is no longer necessary to urge the matter further, nay, quite as superfluous as it would be to caution them from swallowing arsenic, or plunging themselves headlong from a precipice? Not to appear, however, too sanguine in a matter which experience shews to be doubtful, and wherein excess of caution never can do harm, I shall venture to add a few friendly admonitions; for PREVENTION, in morals as in medicine, is easier and better than CURE.

1st. Let me earnestly intreat those temperate persons of both sexes, and particularly my fair readers, who have hitherto cautiously abstained from spirits, as they value their health, and every thing that is dear to them, to hold fast their resolution, and remain firm against temptation. Let no strong liquors be ventured upon as a remedy against bodily pain, or uneasiness of mind; nor let any specious arguments betray you into a belief that such liquors (except in the cases already mentioned) either are, or can be, necessary to persons in health, much less to young children. Since it rests with you, who are strictly temperate, to give a check to this unseemly vice; let me persuade you not only to keep a watchful eye over your own conduct, but to exert all your influence—

influence—all your authority—to discountenance it in others.

2dly. Let those who from being frequently enticed to taste spirituous liquors, and at length begin to contract a fondness for them, reflect a moment on the danger of their situation, and resolve to make a speedy and honourable retreat. Let them remember that custom soon changes into habit; that habit is a second nature, by no means easy to be subdued. For it is by such little unsuspected beginnings, that this unfortunate habit is generally contracted, and, when once confirmed, rarely terminates but with life! Learn then, in time, to resist this bewitching spirit whenever it tempts you. By this means you will soon find yourselves so perfectly easy without it, as at length never to regret its absence; nay, thrice happy in having escaped from the allurements of such a dangerous and insidious enemy.

3dly. Having thus far suggested means by which this vice may be prevented, or even remedied in its earlier stages, I now proceed to the more difficult part of my task,—the BOLD or the ARDUOUS attempt to reclaim the thorough-paced dram-drinker, whose habit has been contracted in youth, strengthened by indulgence, and rivetted by time—a task apparently as impracticable as to wash the *Æthiopian white*; or to divest the Leopard of his spots! Difficult undoubtedly it is, though by no means impossible,

possible, since I can venture to affirm, that every thing necessary to accomplish it (unless he be greatly wanting in himself) is contained in two words, viz. to BEAR and to FORBEAR. Learn to. BEAR then, from this moment, the *want* of your accustomed liquor; and to FORBEAR ever more even to *taste* it: for it is not merely the want of *power* that enslaves you to this groveling vice, but the want of *will*—the want of *resolution*—and the want of *these* is the want of every thing *requisite* to your cure.

Nor is the relinquishing this pernicious habit *suddenly* so dangerous a matter as you have been taught to imagine; otherwise, how comes it that certain persons in your situation, who from being on a sudden debarred the use of spirits, by long confinement in a well-regulated prison, have not only been happily cured of the inveterate habit, but their health improved, and their life greatly prolonged? Instead of the slow, uncertain method of cure recommended by others, let me advise the following, which, if duly observed, you will find as effectual as it is expeditious. It is perhaps not yet too late, but must be begun without delay. Resolve then, from this moment, by *one bold stroke*, to break the *incantment* at once. Having placed a seal on your cellar door, or delivered up the key to a trusty domestic; let a memorandum be instantly drawn up in his presence; and attested in due form, announcing your resolution of renouncing all spirituous liquors under

a very

a very heavy penalty, during the full term of—suppose—two years. Let it be kept in your pocket-book under the title of **RESOLUTION INVIOABLE**, and with it a copy of these rules, as a constant monitor. At the expiration of the term, I shall be happy to see an attested certificate of the engagement having been faithfully performed, and to suggest such farther term of keeping the instrument in full force as may seem necessary to complete the cure. During the above period, you may be allowed good English wines, beer, cyder, or perry, in moderation; but remember, not a drop of spirits of any kind must be tasted on any pretence whatever. Frequent cravings for the delusive spirit, with other unpleasant feelings, must and will sometimes obtrude themselves. These, though not dangerous, are irksome; they may however be banished by an occasional cup of ginger or ginseng tea, or rather by brisk exercise and firm resolution: but were these feelings a thousand times more troublesome, not an inch of ground must be yielded till you have gained a complete victory. To encounter difficulties, is valour—to vanquish a powerful enemy, conquest—but to conquer one's-self, is glory, honour, and triumph!—A contest truly worthy of a rational being! Think how infinitely more severe is the penance which the Braimins, or the Monks of La Trappe, or Chartreux, those unhappy votaries of superstition, voluntarily impose upon themselves! The present contest,

contest, remember, is not for an empty imaginary object, but for a real prize—a prize that is inestimable! not for the fading laurel or tinsel'd wreath, for which others contend, but for those more blooming, more *substantial honours*, which **HEALTH**, the **DAUGHTER of TEMPERANCE**, only can bestow. For it is thine, O **HEALTH**, and **THINE ALONE**, to diffuse through the human breast that genial warmth, that serene sunshine, which glows in the cheek, which sparkles in the eye, and which animates the whole frame!

4thly. I come now to that class of veterans who, deaf to every intreaty, have arrived at the last stage of habitual dram-drinking; who to this vice have added infidelity, and abandoned themselves wholly to debauchery; as if the taper of life could not be burnt out with sufficient rapidity without being lighted at both ends! Bent upon what they call a "*short life and a merry one*," (but which we shall venture to pronounce a short and *miserable one*) they will doubtless spurn at these rules and admonitions, and continue to run headlong to their ruin. It is in vain, then, to reason with such despicable slaves, as can so tamely, and without one generous struggle, give up every pretension to that *noble freedom* which dignifies *rational beings*, and which ought to be their *pride as Britons and as men*! Since vice, it seems, is more truly desirable than virtue, poverty than plenty, and since even sickness and remorse are better than

health and serenity, you will wisely resolve to go on and complete your career. Nor shall I deign to stop you a moment, or contest the envied right to which you lay claim of ruining yourselves in your own way. With minds depraved, and constitutions shattered, I perceive you are hastening fast to that “bourne from whence no traveller returns.”

As you have probably long ceased to consider yourselves as accountable beings, it may now be deemed impertinent to revive your misgivings, on that subject, or to dash your fond hopes of taking shelter in non-existence, by reminding you of the possibility of an HEREAFTER.—“To die—to sleep—nay, perchance to dream—yes—there’s the rub!” —How great must be your surprize, should you suddenly be roused from this dream! When the thick mist is dispelled,—When the day begins to dawn, and when you find yourself exposed on the confines of that unknown country!—But what must be your consternation, when on a sudden the veil is drawn aside, and at once displays to your astonished eyes * * * * !!——

————— But here let us pause!—It is not for mortals to presume to penetrate into the mysteries of the invisible world—or to unfold the secrets of futurity. Neither is preaching my province. To the inspired Divine, it belongs to resume the subject where I am obliged to drop it, and to expatiate on those higher arguments, which, with a trembling

trembling pen, I have scarcely ventured to suggest! His dignified office it is to enforce them with such peculiar energy, as may carry conviction home to the bosoms of such hardened offenders: to prepare them, while here on earth, for the awful scenes of futurity; and finally, to admonish others that are still addicted to this vice, to take warning by their *sad example!*

ARTICLE X. .

A Correspondence on the subject of Burnt Ears in Wheat, which lately took place in a provincial Paper: communicated by a GENTLEMAN who was of opinion some useful Hints may be conveyed in them, and as such, recommended for publication in this work.

LETTER I.

I AM a farmer in the vicinity of Northampton, and have often received considerable injury by having burnt wheat, or what we farmers call Bunty Wheat; notwithstanding I have made use of different kinds of steeps to prevent it, most of which have in some years seemed to answer, in others they have failed, therefore cannot be called infallible preventives. I could therefore wish to ask, through your paper, *what is the real cause of Burnt Ears in Wheat,*

stroying the farina of the male flowers, and hence light or lean ears of corn. A reference to maltsters and millers might tend to elucidate the observation.

I shall only add, that in regard to melon seeds, those are preferred by gardeners, which have been preserved five or six years, perhaps more; new seed, I apprehend, producing plants greatly luxuriant in vine, with male and female flowers so defective, that practitioners cannot set the fruit: in one of the volumes of the Philosophical Transactions, an account is given of melon seed being good after forty years keeping.

A LOVER OF AGRICULTURE.

LETTER III.

THE real cause of Burnts or Bunts in wheat has puzzled many; and I believe very few persons, for want of philosophical knowledge, have been able to point out the true reason for it, upon principles whereby it may be discovered. Mr. Fletcher, of Sheffield,* has given the following observations, which appear to me very pertinent; and being in the hands of but few, may prove acceptable to some of your readers.

* See Gentleman's Scientifical Repository, vol. i. p. 111.

"Burnts,

"*Burnts*, or *bunts*, are occasioned by a number of nitrous, sulphureous, and heterogeneous particles; these particles, when mixed together, cause a fermentation; whence the aqueous and more simple parts are dissipated, and the other more dense, corrosive corpuscles are formed in drops, and fall upon the tender buds of corn; and being susceptible of absorbing the solar rays, burn and destroy them. As to preventing, or eradicating *burnts* or *bunts*, it seems an impossibility, they being neither an accidental nor parasitical malady; but those lands which abound with mineral exhalations, are most subject to this malignant destructive malady, and particularly when the season is hot."

J. B---H.

LETTER IV.

THE two answers you have received to Farmer Slouch's request, concerning *bunty wheat*, do not appear to me, and to many farmers, any ways satisfactory, as they both seem to proceed from the chimeras of speculative farmers, and not from those who have derived any real knowledge from experiment. "*A Lover of Agriculture*" recommends old seed for sowing, (which perhaps may have lost its vegetative principle) as the best means to prevent

vent bunts; but surely the same reason will hold good with respect to good seed as bad. If the defective seed decay when old, surely the good cannot receive any improvement; the knowledge a person receives from Tull's husbandry can never be of any use to the experimental farmer; the perusal may amuse the idle and the futile, but can never contribute any thing towards publick utility.

J. B---h's Philosophical Reasons, &c. seem to have been fabricated by Mr. Fletcher, on purpose to answer a query at a certain time; they cast very little light on the subject; for what do farmers in general know of *nitrous, sulphureous, and heterogencous* particles? It is my opinion (and not my opinion only, but what I have acquired from repeated experiments) that the cause in general of bunts in wheat, proceeds from a neglected cultivation of land, and not being careful to procure the purest kind of seeds, and not previously preparing it with brine, lime, &c. with which almost every farmer is acquainted.

I will beg leave to recommend to farmers in general, to sheep-fold as much of their land as possible that is intended for wheat, as that is more beneficial than any other kind of manure;—keep the land clean from weeds, and I trust, by a perseverance in this practice, there will be but little cause of complaint about bunts in future.

LETTER V.

IN answer to Farmer Slouch, respecting the occasion of *bunt* wheat, I beg you will insert the following, a due observance of which, I am persuaded from my own study, will prevent it:—Let the farmer set his labourers to draw from the sheaves, before they are threshed, all the primest and best of the ears of one colour, either red or yellow Lammas (I believe the red Lammas is the best). Sow an acre or two of this wheat for his own seed the next year, and do this every third or fourth year; by this rule he will have all his wheat of one colour, and without doubt free from the disease of smut, for it is the underling ears, and the poorness of the land, that cause wheat to degenerate and turn to smut.

If the method of picking all sorts of corn for seed were in general use, it would prove the greatest ornament to the field, and improvement in the farming business, ever yet found out.

AN IMPROVER OF NATURE.

LETTER VI.

NOT seeing any satisfactory answer in your paper, respecting the cause of *Burnts* induces me to say that I believe the cause is an insect.

Malpighi,

Malpighi, and several other celebrated writers, inform us, that "Insects take particular care to deposit their eggs or seed, in such places where they may have a sufficient incubation, and where the young, when hatched, may have the benefit of proper food, till they become able to shift for themselves; those whose food is in the water, lay their eggs in water; those to whom flesh is a proper food, in flesh; and those to whom fruits, or leaves of vegetables are food, are accordingly deposited, some in this fruit, some on that tree, some on one plant, and some in another, but constantly the same kind in the same plant; as for others that require a more constant and greater degree of warmth, they are provided by the parent animal with some place in or about other animals; some in the feathers of birds; some in the hair of beasts; some in the scales of fishes; some in the nose, some in the flesh; nay, some in the bowels and inmost recesses of man, and other creatures. And as for others to whom none of these modes are proper, they make them nests by perforation in the earth, in wood, and the like, carrying in and sealing up provision that serves both for the production of their young, and for their food when produced."

CHAMBERS.

Granting the above to be true, it may not be unreasonable or unnatural, to suppose some insect may deposit

deposit its eggs or feed on wheat when growing, and that if that egg, eggs, or seed, be not killed before the corn is buried in the earth, it may there, after proper incubation, become an insect, and feed upon the tender root of the plant; and as I conceive every corn in an ear of wheat has a capillary tube, that conveys food from the root to that particular corn, if that conveyance be stopt by the insect having wounded or injured the tube; perhaps the corn, (the flour that should be) for want of proper food, may corrupt and become a black fetid powder, or what we farmers call burnts or bunts: or it may not be unnatural to presume that the faeces, effluvia, respiration, or rather the expiration of the insect, may in some measure taint the juices with which the plant is fed, and be a means of producing, in the ears, corns filled with a black rancid powder, instead of a sweet white flour; or that the minute animalcules may insinuate themselves into the tubes of the plant, and ascend with the food into the bulk or bran of the corn, and, not having strength sufficient to break it, may by its effluvia, &c. or death, occasion the fetid smell and dark colour. If part of the tubes only are injured by the insect, part of the corns in the same ear may be burnt, the other part good; but in general, nay, I never found a burnt ear of wheat coming from any particular root, but that all the ears coming from the same root were more or less burnt also.

also. If the stem of a burnt ear be cut just above the root, it will be found considerably harder than that of a sound one; probably the juices of the one may be stopt, by the insect having injured the tubes, and continuing to ascend in the other, may occasion the difference.

Impressed with the idea, three years since, that insects are the cause of burns, I tried the following experiments in the middle of a twenty-acre close; the residue of the said close was sowed with the same kind of wheat, and treated in the same mode, as No. I. and II. and was equally as clean, and my crops have been so ever since: my mode of medicating my wheat is No. II.

No. I. Sowed five drills (with Mr. Cooke's machine) with wheat treated agreeable to Mr. Middleton's recipe.

No. II. Sowed five drills, with wheat wetted with old urine, three quarts to a bushel, and turned about with a shovel till all the urine was imbibed, then plenty of quick-lime sifted over it, and turned over and over with a shovel, and left in a heap till next morning.

No. III. Sowed five drills with wheat steeped two hours in a strong lye, made of wood-ashes and lime, and laid on the barn-floor to dry.

No. IV. Sowed five drills with the same kind of wheat, *dry*.

RESULT.

No. I. and II. scarce a burnt to be found in them.

No. III. about a twentieth part burnt.

No. IV. near a fourth burnt.

No. V. Picked ten good corns out of an ear, the remainder were burnt; planted them in the garden; six only vegetated, which produced 72 ears, *one* root of which only was burnt, consequently the opinion that the good corns in a burnt ear produce burnts again is fallacious, otherwise the whole must have been burnt.

The above experiments seem to say that wetting wheat with old urine, and drying it with lime, is a preventive; and I conceive that an insect, by depositing its egg, eggs, or seed, on the corn when growing, is the *cause of burns*. Supposing this to be the case, the wetting the corn with brine, urine, or strong lye, would of course destroy some of the eggs or seed, or even an animalcule, and the lime by its corrosive quality annihilate the remainder; but should any of the eggs, &c. remain on the corn animable, there may be here and there a Burnt in the crop. But if on the other hand the insect should deposit its egg, eggs, or seed, in the earth, it is possible the brine, urine, and lime, wherewith the corn is as it were coated when sowed, may be unpleasing to the delicate taste of the little animal, and prevent its wounding the tubes of the plant.

If

If any conclusion may be drawn from the experiments herewith accompanied, I should think that "A Lover of Agriculture" is not right in supposing the cause of burnts arises from corn not perfectly ripe, or impregnated with the farina of the male, because the trials above were sown with the same seed on the same land; and think I may be allowed to say at the same time; No. I. and II. were without burnts, No. III. and IV. had plenty of them. If the weak or unripe corns had produced burnts, of course they would have been in No. I. and II. as well as in No. III. and IV. unless we presume that urine and lime have a power of preventing the vegetation of the weak or unripe corns; and if they have a power to prevent the vegetation of the weak or unripe corns, it is not unreasonable to suppose they may in some measure weaken the good, and be a means of giving birth to the very disease intended to be extirpated; which in practice I have not found to be true.

Respecting J. B---h's reason given for the cause, it is true it is philosophic, and, from common observation only, I should have concluded it was the true one; but a too intimate acquaintance with burnts, obliges me to dissent. If the cause came from the atmosphere, I should think it singular indeed if *ten* rows in the middle of a twenty-acre close received the *whole* of the malady, and the other part of the corn growing on each side none at all.

If

If nitrous drops, &c. were the cause, they would be more diffusive, nor would it be in the power of any nostrum to prevent it, which experience contradicts.

In answer to S——, and "An Improver of Nature," I must beg leave to say, that if the former cultivates a piece of land in the best manner possible, and the latter picks some wheat from the best ears he can procure, and sows this picked wheat *dry*, on this highly cultivated soil, I have not a doubt but the produce will be burny; but if wetted with brine or urine, and well limed, the reverse; in short, I look upon lime to be the *grand specific* to remove the *cause of burnts*. As brining and liming wheat before sown, is universally practised, and I believe justly acknowledged to remove the cause of burnts, it naturally leads to an enquiry of what that cause can be, and where lodged, that brine and lime, urine and lime, or water and lime, have a power of annihilating; and I must confess I cannot see a more probable cause, than that it is an egg, eggs, or seed, lodged on the corn by an insect, and if so, the plump corn is as liable to contain them as the thin, and the well-tilled land to give them birth, nurture, and maturity, as the bad. I have had as clean and full a crop from sowing burny wheat, as from the best I ever sowed.

The preceding are my ideas, respecting the cause of burnts.

ARTICLE XI.

*On the Construction of Reservoirs to preserve the
liquors from Stables, Cattle-Stalls, &c.*

[With a Copper-plate.]

DEAR SIR,

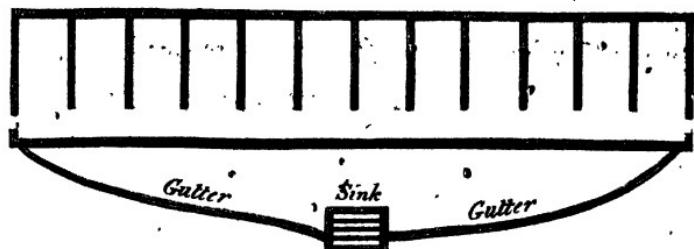
Boston, May, 27, 1793.

I OBSERVE the society have offered a premium to the farmer who shall construct the best sort of reservoir to preserve the liquor from stables, cattle-stalls, &c. A farmer who is my patient (Mr. Thomas Powell, of Semley, Wilts) taking notice of this article, took me out to see one of his, which appears to me to be upon the best possible construction, and which he is about to enlarge, with a view, I believe, to become a candidate for the premium. The rude sketch annexed, [see the plate] will convey a sufficient idea of his method, which the spot very much favours.

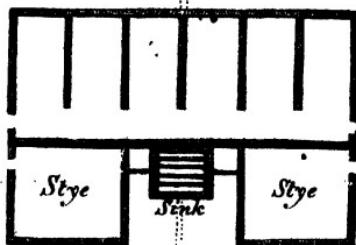
The cow-stalls stand nearly on the top, but a little on one side of a nap, and by means of gutters behind, the liquor is carried into a sink which runs under the stable, where it meets, by the help of another sink, with the stable liquor; and these, together with the liquor of the pig-sties, run through an under-ground drain into the reservoir, into which Mr. Powell throws all kinds of weeds or other refuse vegetable or animal matters, where it of course

rots;

Stalls for 12 Cows.



Stables for 6 Horses.

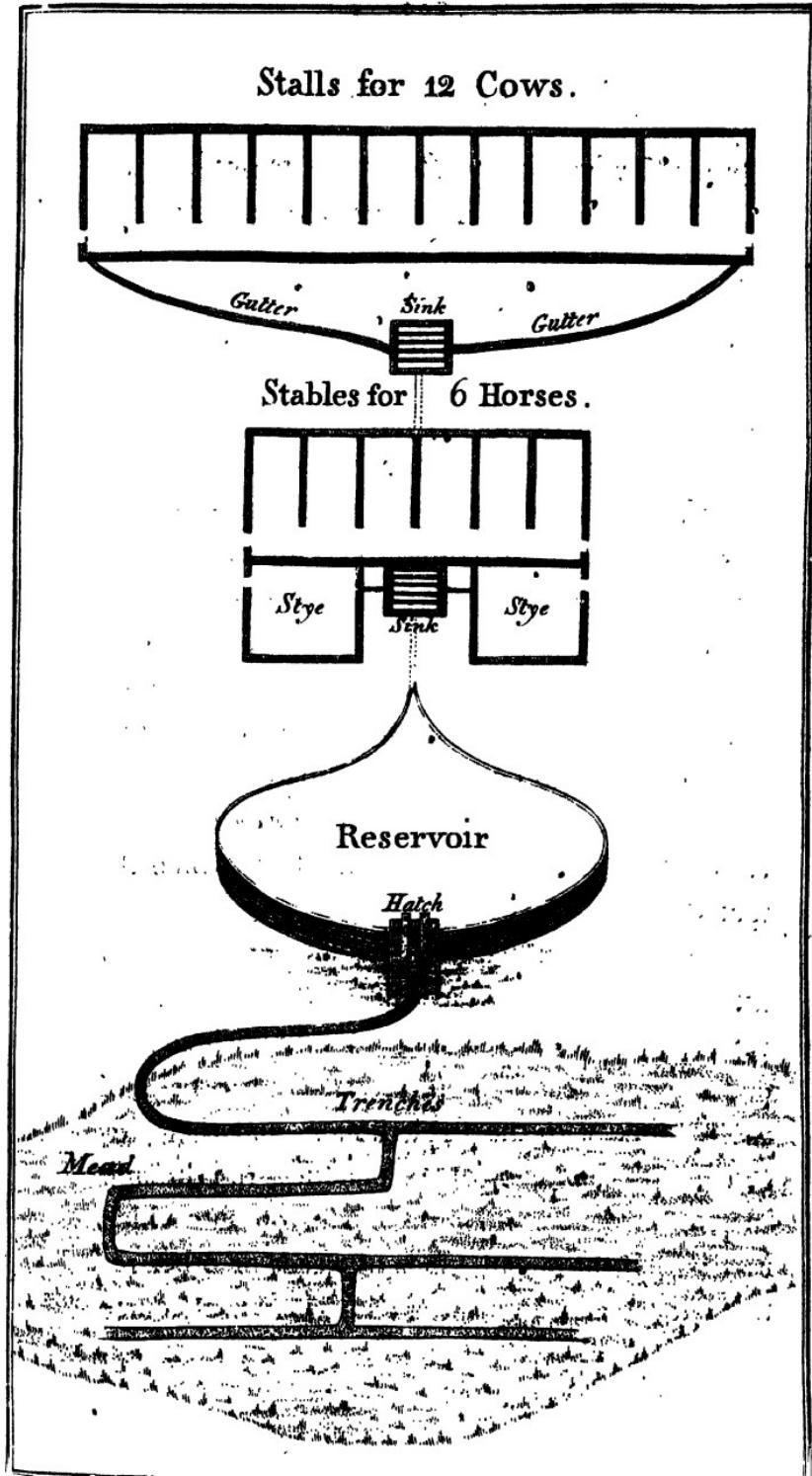


Reservoir

Hatch

Trenches

Mead.



rots; if the weather proves wet, he stirs it well by means of poles, then draws up the hatch, and by means of the trenches, it is conducted to all or any part of the mead below, which mead is rendered almost incredibly productive by it; and the whole is, in general, at least a month before any of the watered meads I have seen, though I have occasion to go through many almost every day. If the weather proves dry, he throws the reservoir and casts the manure at his leisure where wanted. Simple watering undoubtedly produces wonderful effects, but I much doubt if any thing equal to this; nevertheless my neighbour Mr. West, a very observing and diligent farmer, tells me that a friend of his took the pains one year to carry out all his stable liquor *alone, without observing any good effect,* and this person knew another who had done the same with no better success; this, however, by no means proves that it may not be an excellent ingredient for hastening the putrefactive process, in a compost similar to the above; and in that point of view, I cannot help thinking that the object of the society's inquiry is fully answered, in the plan of Mr. Powell, namely, that of converting stable, cow, pig liquor, &c. to the *most useful purposes,* and at the *smallest expence.* In very large farms, it is easy to conceive that this plan might be extended, if the stables, &c. were placed on the centre of a knoll or nap; three or four reservoirs might be made, and by stopping

some drains and opening the other, the liquor might be directed one year to this, and another to that side of the hill, as it was most wanted.

Mr. Powell also desired me to notice his home garden, where every thing was in strong vegetation; and no trace was to be seen of the effects of the slug, and another at some distance where every thing was disfigured, and many almost eaten up by that insect. This he ascribes, and seemingly with reason, to a compost (with which the home garden is manured) formed by all the refuse of his premises, viz. all the *soot*, *ben-dung*, *chamber-lye*, sweepings of the home-yard, hackney-stable, &c. promiscuously thrown together. Hence is it not probable that many kinds of manure operate by *destroying impediments* to vegetation, rather than by *furnishing* the means by which it is promoted—the food of plants?

It is remarkable that there are two scrubbed apple-trees in this garden, which never fail to bear; I have known them these eight years, and do not recollect their failing to blow once; this also Mr. Powell ascribes to the plenty of manure, which they receive in common with the rest of the garden.

One other remarkable circumstance occurred in my conversation with Mr. Powell: he says, that when he was a school-boy, (in the year 1764) he remembers that his father had a field of beans, which appeared so bad from the bite of some insect, that he was on the point of ploughing it up: he thought

thought however he would first try the effect of *rolling it by night*, which was a very common practice in the parish at that time. The consequence was, a speedy improvement in the appearance, and the final result a crop of 12 sacks of beans per acre. Thomas Oliver, a labourer who still works for Mr. Powell, assures me that he threshed three sacks per day, and that he could easily have done more, and remembers that one stalk had upwards of 150 pods on it.

I am afraid you will find me a very troublesome correspondent, but from the very handsome manner in which the society has adopted me, I shall always esteem it my duty to forward their views even by the most slender efforts.

I remember to have seen in a former premium book, that the society either offered a premium, or requested the assistance of gentlemen, to ascertain the *synonyms* of apples, or the different names by which they are known in different places, their respective merits either as cyder or table fruits, and the time they will respectively keep; the whole with a view to correct the fruiting of orchards. This is an object which I have long had in contemplation, and by means of a small nursery in my possession, I hope to contribute my share to this desirable purpose. I have had thoughts of desiring some intelligent rider to take notice in the different counties of the different apples, and the names by

which they are known; but I am afraid it would be impossible to find one who would unite sufficient zeal with sufficient knowledge of the subject.

It has, however, occurred to me that the object may be accomplished (if it has not been already done) in a more certain and simple manner by the society itself. I have collected a list of, I believe, most of the names of apples in Somersetshire, Dorsetshire, and Wiltshire, and have arranged them as far as I can at present learn, in the order of their supposed superiority, either as cyder or table fruit; it is my intention, if I can find time, to procure in the ensuing season, about three specimens of each sort, the largest, the medium, and the smallest sized, to mark the name on each sort, and send them carefully packed to the society; if you could at the same time prevail on some friend in the counties of Hereford, Gloucester, Worcester, and Devon, respectively to do the same, the society would be able to ascertain what number of distinct species there are, by how many different names they go, and the relative merits of each.*

The society's premium for making the greatest number of sorts of cyder, each made only from one sort of apple, is, I think, likely to be attended with

* This business, has been proceeded in with some attention and success; but more are expected from a future continuation of the society's endeavours.

very good effects; but there are several sorts of apples whose superiority is already well known, the multiplication of which would be very desirable; a small premium offered to the nurseryman, who should in any year graft the greatest number of these sorts, (not less than a certain number) would perhaps tend more speedily to correct the fruitings of orchards, than any other means; for here (as in the rotten boroughs) the demon of corruption begins his work. The object of the nurseryman is in general to take such grafts as make the most rapid shoots; and my nurseryman, in common with the rest, laughs at the idea of my scrupulously attending to the excellence of the sorts; these grafts are therefore often from the worst sorts of apples, (for ill weeds grow apace.) But the honour and the amount of a small premium, which would defray the expence of grafting a great number of stocks, would probably very much counteract this practice, and by laying the axe to the root of the tree, one part of the society's object would be immediately obtained.

I am, dear sir,

Your much obliged friend,

R. PEW.



ARTICLE XIV.

*Address to the Landholders of this kingdom; with
PLANS of COTTAGES for the habitation of Labourers
in the Country, calculated to save the Expence of the
Builder as much as is possible, without injuring the
Health or Comfort of the Inhabitants thereof.*

BY THOMAS DAVIS,

STEWARD TO THE MARQUIS OF BATH, AND TO THE
RIGHT HON. LORD CARTERET.

IT being allowed, that manual labour is, and always will be necessary, for the cultivation of land; it follows that houses, for the habitation of those who are to perform that labour, are indispensable.

If the inhabitants of these houses are in health and able to work, they will be able to support themselves by the hire of their labour. If they are not, they become a burthen to the parishes to which they belong, and the laws will oblige the landholders to maintain them. To preserve the health and strength of these *poor*, but *necessary* fellow-creatures, is therefore not only the duty, but the interest of the landholders. Men of feeling will endeavour to do this from *principle*. Men without feeling (if such men there are) will find it their *interest* to do it. The first step towards this necessary purpose, is

is that of providing proper habitations for them. Humanity shudders at the idea of an industrious labourer, with a wife, and perhaps five or six children, being obliged to live, or rather to exist, in a wretched, damp, gloomy room, of ten or twelve feet square, and that room without a floor; but common decency must revolt at considering, that over this wretched apartment there is only *one* chamber, to hold all the miserable beds of this miserable family. And yet instances of this kind (to our shame be it spoken) occur in every country village. How can we expect our labourers or their families to be healthy, or that their daughters, from whom we are to take our future female domesticks, should be *cleanly, modest, or even decent,* in such wretched habitations?—To remedy this serious grievance, the following plans of cottages for the habitation of the labouring poor in the country, are submitted to the society.

Plans of cottages may be drawn, and calculations made to build them, at a less expence than these herewith sent to the society; but the writer of this pledges himself, from the result of long experience, that nothing less than fifty pounds for a single cottage, or ninety pounds for two dwellings under one roof, (even in the Western counties, where materials and workmanship are cheaper than in many other parts of England) are sufficient to build cottages
that

that are comfortable, or even healthy, or such as a humane landholder would wish to build, or an industrious labourer with a decent cleanly wife and family, would, if they could possibly help it, inhabit.

As the health of the inhabitants is certainly the first object to be considered in building houses, and as a free circulation of air is allowed to contribute very essential thereto; the lower rooms in all these plans of cottages are at least seven feet high under the beams, and the upper rooms at least six feet eight inches.

And as every humane builder of cottages would wish to make them as comfortable as possible, where it can be done at a small additional expence, a chamber-chimney is drawn in the greatest part of the following plans.

THE plans of cottages on the plates annexed, and hereafter described, have in part been already executed by the Marquis of Bath, part by Joshua Smith, esq; and the rest are new designs.

The estimates of building them are calculated, supposing them to be built with the rough stone of the neighbourhood, and with elm or fir timber, and covered with thatch.

The rooms on the ground-floor are all supposed to be paved with rough stone or brick: the walls of all

all the rooms to be plastered, and all the upper rooms to be cieled.

As some gentlemen may wish to build cottages in parks or plantations, to serve in some degree as ornaments thereto; part of these designs are calculated for that purpose, with very little addition to the expence.

N. B. As the materials used in building cottages differ so very materially both in their kind and price in different parts of the Western counties, (much more so than in more expensive buildings) and as the price of labour is frequently low where the price of materials is very high, and vice versa; the collector of these plans thought it would be most likely to meet the wishes of the society, to select such as contain the greatest quantity of *convenient* room, with the least quantity of materials, and to give a round sum at which they may *in general* be executed in the Western counties, instead of entering into a detailed estimate of the particulars, as the latter must be local, and can only hold good in particular situations.



PLATE I.

PLAN

OF

A PLAIN USEFUL COTTAGE
OF TWO STORIES,

Containing three rooms below, and two above, with
a skilling behind for fuel.

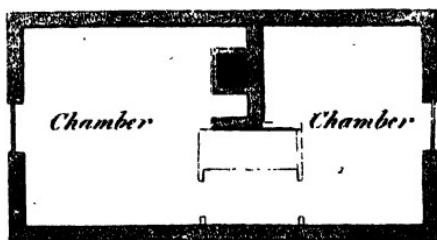
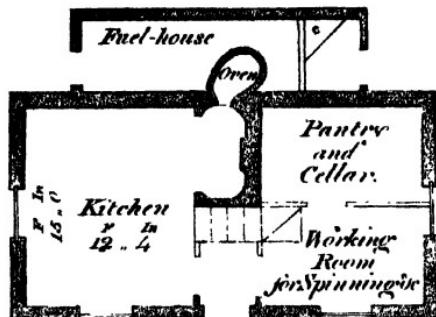
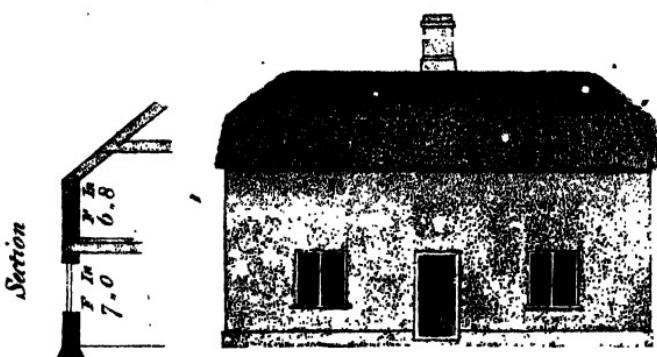
The chambers lighted from the ends, by windows in
the gables, and the roof finished with a half-coot
over the windows,

ESTIMATE, FIFTY POUNDS.

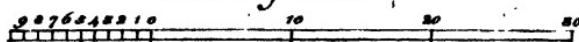
This plan is the most simple that can be contrived,
to have *two* bed-chambers.

The Room, marked Working-Room, will be necessary to spin in by day, to put by the spinning-wheels when not in use, and in countries where there is no manufacture, will be useful for a cleanly house-wife to wash in, &c.

N^o. 1. Cottage with two Rooms on a Floor.



Scale of Feet.



Hibbert, Bath, Sculp.

PLATE II.

PLAN .

OR

A PLAIN USEFUL COTTAGE
OF TWO STORIES,

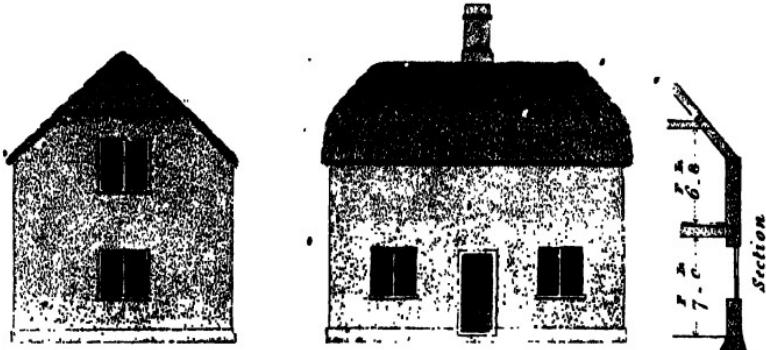
Containing three rooms on a floor, and a skilling
behind for fuel.

The chambers lighted from the ends.

ESTIMATE, FIFTY POUNDS.

In this plan the size of the kitchen is lessened, to give
an opportunity of making *three* rooms on the
chamber-floor; where it may be thought necessary
so to do.

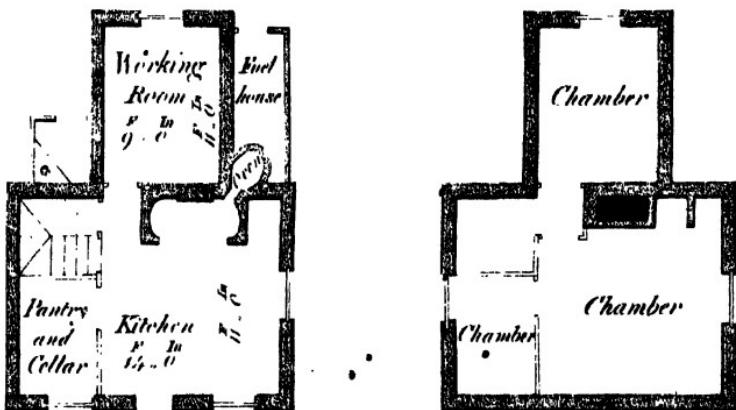
N^o2. Cottage with three Rooms on a Floor.



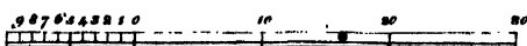
*Elevation of
one end*

Elevation of Front

Section



Scale of Feet



Hibbert, Bath Sculp.

PLATE III.

PLAN
OF
AN USEFUL AS WELL AS ORNAMENTAL.
DOUBLE COTTAGE,

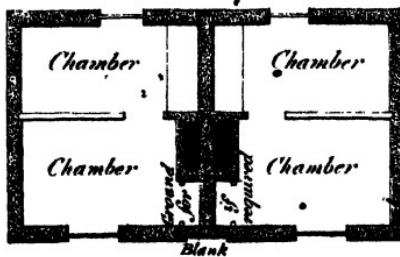
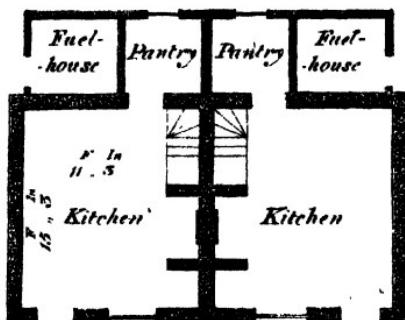
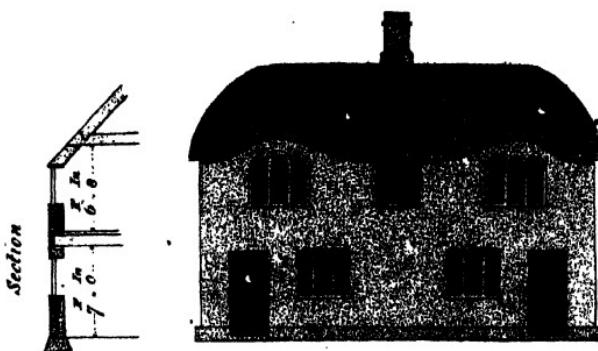
Each dwelling containing two rooms on a floor, the pantries and fuel-houses being skillingly behind.

Or this cottage may be executed *plain*, with horizontal eaves, and plain square chamber-windows.

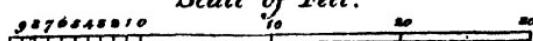
ESTIMATE, NINETY POUNDS.

The ground plan of this cottage is the most simple, and perhaps the smallest that can be contrived for *two* families. The elevation (if not approved) may be altered at discretion.

N^o3. Small Double Cottage with Skilling behind



Scale of Feet.



Hibbert, Bath, Sculp.

PLATE IV.

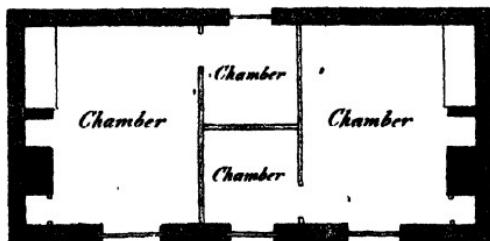
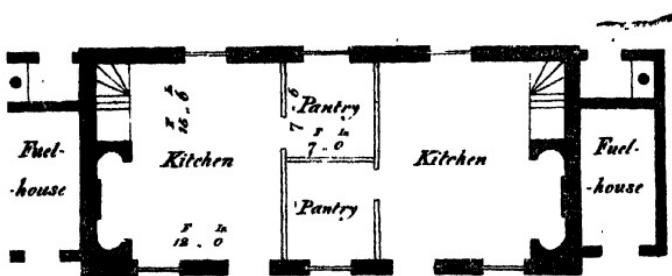
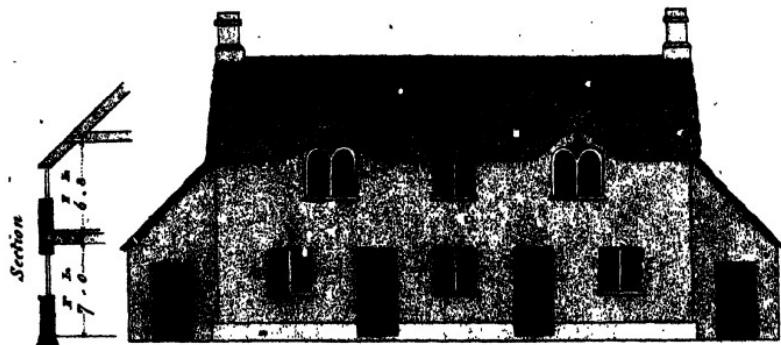
**PLAN
OF
AN USEFUL AS WELL AS ORNAMENTAL
DOUBLE COTTAGE,**

With two rooms on a floor, and skillings for fuel
at the ends.

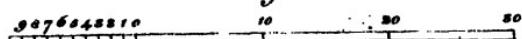
Or this cottage may be executed with plain square
chamber-windows and horizontal eaves.

ESTIMATE, ONE HUNDRED POUNDS.

N^o. 4. Double Cottage with Skillings at the End



Scale of Feet.



VOL. VII.

x

PLATE

PLATE V.

PLAN

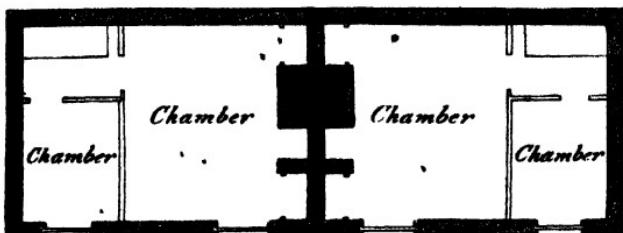
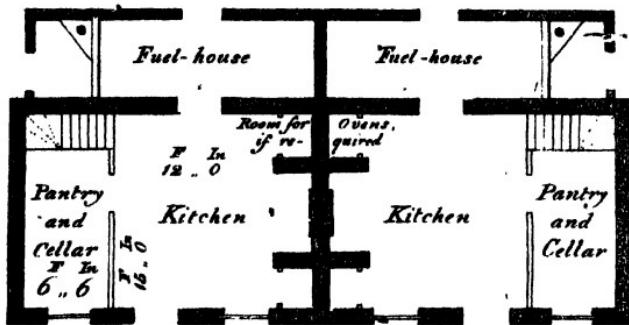
OF

A LARGE DOUBLE COTTAGE

With every necessary Convenience.

ESTIMATE, ONE HUNDRED POUNDS.

N^o5. Large Double Cottage with Skillings behind.



Scale of Feet.



Rubber, Bath, Sculpt

PLATE VI.

PLAN

OF

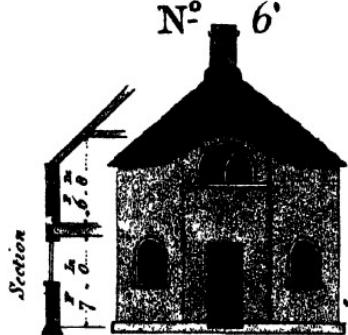
AN ORNAMENTAL COTTAGE,

Of three rooms below and two above, with a
skilling for fuel.

ESTIMATE, 'FIFTY POUNDS.

Ornamental Cottages.

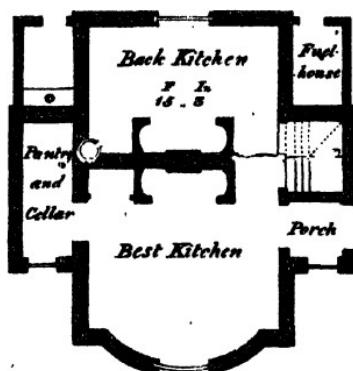
N^o 6.



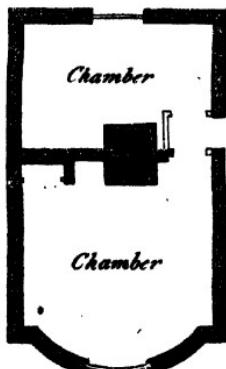
N^o 7.



Section

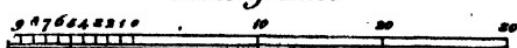


Chamber



Chamber

Scale of Feet.



William Heath, Sculp.

PLATE VII.

PLAN

OF

AN ORNAMENTAL COTTAGE

FOR

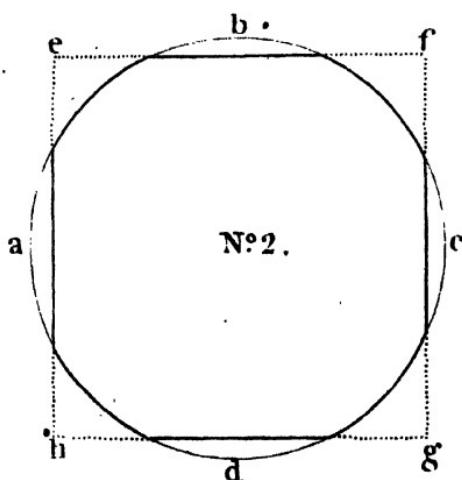
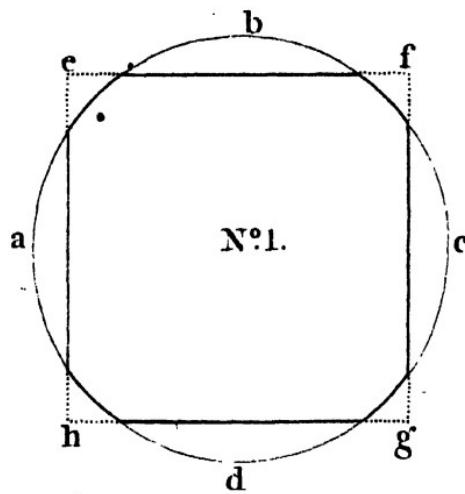
A PARK OR PLEASURE GROUND,

With every necessary Convenience.

ESTIMATE, *SEVENTY POUNDS,*

On account of finishing one Room for Tea-drinking, &c. occasionally.

ARTICLE



ARTICLE XV.

A Plan for the General Prevention of Poverty.

[In a letter addressed to GEORGE ROSE, esq.]

Nullum Numen habes si sit prudentia; sed te
Nos facimus Fortuna! Deam.—

SIR,

OBSERVING by the publick prints that, exclusive of your official duties, you were actively engaged in parliament on various important subjects, I did not presume to acknowledge the receipt of your letter, &c. until now that the session is closed.

I have perused the bill you did me the honour to send me (for the security of friendly societies) with much pleasure; the respective clauses appear to me highly judicious; the act, *so far as it goes*, cannot fail to produce very beneficial effects, and, in my opinion, intitles you to the warmest thanks of your country: I say *so far as it goes*, because it is evident, on the inspection of our respective plans, that whilst yours extends only to the fostering care of societies already existing, mine (as far as respects this island) goes to the comprehension of *the whole human species*. If the collection of a *small* but *voluntary* tax, upon the *sober* and *industrious* citizen, for his own use when in distress, be in *some degree* beneficial, I conceive that the collection of a still *smaller*, though *compulsory*

for a tax upon all ranks of men, the *idle*, the *improvident*, and the *irresolute*, as well as the industrious citizen, for the same purpose, would be a measure *as much more* beneficial as it is *more extensive*; for in cases where we cannot reasonably hope to reform, we should endeavour to *counteract*; and it is my firm persuasion, (although I waive the question whether *this* be the proper moment for the attempt) that if any thing great, if any thing manly, if any thing important, is to be effected with regard to our poor laws, *some degree of compulsion is absolutely necessary*; nor can I see the *smallest injustice*, in a measure which I will venture to say would *bear hard* upon *no one*, and be for the *advantage* of all. In the present critical and embarrassed state of this country, no one, who is not conversant with the *trading* and *middle ranks* of life, can form an adequate idea of the *difficulties* they at present experience; the taxes bear heavier on them than they can well endure, (in other words, they have not been able to increase their profits in *proportion* to the increase of taxes) and it is my serious opinion, that, if hard pressed by their creditors, *nine-tenths* of them would be found to be in a state of *insolvency*.

From a *thorough revolution* in the poor laws, the most *powerful* and the most *permanent assistance* may be looked for, with *certainty*; and although the attention of the minister may have been taken up (as no doubt it has been) by matters of more *immediately*

ately pressing necessity, yet, I am bold to say, that a subject of more general importance cannot engage the attention of man.

I shall now, sir, proceed to give you a general outline of the easy manner in which I propose to carry this simple, though comprehensive idea, into effect; I flatter myself you will immediately perceive, that the system is *in itself* a *whole*; that in principle it is *complete*; and if the documents in my possession should not (as I trust they will) enable me *at once* to meet *every possible* case of distress, yet a little experience could not fail to suggest a *remedy* for *every defect*.

CLAUSE I.

That a proper officer be appointed for such an extent of district, as he may be supposed conveniently to superintend, to take a list of the names and places of abode of all males above the age of eighteen, and of all females above the age of seventeen years, in the same manner as the list is made out for the militia.

II. That every such male pay two-pence per week, and every such female three farthings or one-penny per week, into the hands of the above officer, for the purposes hereafter to be specified.

III. The above officer shall be empowered to furnish employment for all such as are willing to work, and who cannot find it for themselves. Whether this officer should be chosen annually in rotation, after the manner of an overseer, or whether he should be a permanent officer upon an adequate salary, will be a matter of future consideration; but if the

the latter, he should be paid by the community, and not out of the fund.

IV. All the poor being thus sure of employment, the master or mistress for whom they work should be justified in retaining these sums respectively out of their wages; and whether they do so or not, they should (in default of the individual) be answerable to the officer for its payment; all masters and mistresses of families should in like manner be answerable for their servants, and all keepers of lodging-houses, &c. for their inmates.

V. These sums should be carried weekly to the general treasurer of the *division*, who should give sufficient security for the same.

VI. Out of this fund, every male who is really incapable of labour should (*by virtue of a certificate from the above officer*) have a *right to demand* from the treasurer five shillings per week for the first six months, should his illness last so long, and four shillings per week after that period, until he again become capable of labour.

Every female should have a *right to demand* two shillings and sixpence per week, for the first six months, and afterwards two shillings per week, until she be again able to work: she should also be intitled to four weeks full pay, at every lying-in. Every male above the age of sixty-five years, whether capable of labour or not, should be intitled to four shillings per week during life. Every female, after the same age, two shillings.

VII. Any person having three children under nine years of age, should be intitled to one shilling and sixpence per week, until the eldest should have attained the age of nine years, and if he has more than three under that age, he should be intitled to one shilling and sixpence per week for

for each above that number; and if any one or more of his children should happen to be idiotic, insane, or otherwise so far disabled, either in body or mind, as to be utterly incapable of labour, each of them should still be considered as under the age of nine years, and paid for accordingly.

If a mother should be left a widow with three children, under nine years of age, she should be intitled to receive five shillings: if with two children, three shillings; and if with one child, one shilling and sixpence per week; if with more than three under that age, one shilling per week for each above that number, it being admitted that all her time is taken up by three, and allowance made for it, but that she is capable of looking after and taking care of a greater number. The wives of men serving in the militia, and in the army or navy, should, during the absence of their husbands, be considered and provided for in all respects as widows.

If a child should be left an orphan under nine years of age, two shillings per week should be allowed from the fund for its maintenance; if more than one of the same family, one shilling and sixpence per week for each above that number. As there is probably no less friendship amongst the lower, than amongl the higher orders of society, it would generally happen that some friend or relation of the deceased, would gladly take charge of the children, provided they could do so without essentia loss to themselves. This regulation would effectually prevent that los; and to compensate in some degree for the want of parental affection, sixpence per week more is allowed for the maintenance of an orphan, or a family pf orphans, than for a child or a family of children, who still retain their mother. If, however, any beings should be so *uncommonly unfortunate* as not to be thus *adopted*, the officer above-mentioned should be obliged to provide a receptacle for them, which he will always be able to do for the sum or sums above-mentioned.

VIII. All children above nine years of age, if in health, should, if they have no parents, or their parents are not able to provide for them, be put out after the manner of parish apprentices.

IX. All persons neglecting or refusing to pay their contribution, should be committed to hard labour in the house of correction, for the space of — — —

X. If the fund should at any time fall short of the necessary demands upon it, the deficiency should be made up by a parish rate, collected in the same manner as at present; but without any sense of obligation on the part of the multitude, (for there would be *no poor*) who should in all cases receive their relief *in the nature of a demand*.

XI. If the fund (as most probably would happen) should increase beyond the necessary demands upon it, the surplus should on no account be diverted to any other purpose than the benefit of the subscribers; but when the price of grain exceeded that which brings it easily within the reach of the multitude, (suppose 6s. or 6s. 6d. the Winchester bushel) every person who had three children, or more, under nine years of age, should have a right to demand such a sum as, in proportion to the number of his family, would reduce the various necessary articles of life (taking wheat as the standard) to a moderate price; and indeed I think in all cases when the price of grain exceeds that proportion at which the *industrious labourer* can afford to come to market, *sound policy, as well as common humanity*, requires that all large families should be intitled to receive such a sum as above specified, although it should be necessary to collect a rate for the purpose.

I need not, perhaps, add that every officer intrusted with money should give ample security for his integrity, and the faithful discharge of his duty; that due checks should be established

established to prevent embezzlement, and that all accounts should be made up and balanced so frequently as to prevent the probability of mistakes.

And still more effectually to secure the compleat execution of the plan, it would perhaps be necessary to appoint a general inspector of the funds, who, with the assistance of a few subordinate officers, would probably be able to superintend the whole kingdom.

Such, sir, divested of all *technical phraseology*, are the leading features of a plan, which I wished Mr. Pitt to have the glory of carrying into effect ten years ago; the various minute particulars must be reserved to a future opportunity.

I am convinced the scheme is perfectly and *easily* practicable; I maintain that it would save at least **TWO MILLIONS** per annum, to the landed interest; that it would most essentially benefit the poor; and I do not hesitate to deliver it as my decided opinion, that by it poverty and the poor laws would soon be unheard of in our land, so that nothing but *absolute famine* could, under such a regulation (*necessarily*) render any individual destitute of the *comforts* of life.

And now, sir, having, without any reserve, exhibited to you the analysis of my scheme, allow me to add, that whatever be its fate, whether the author of it be honoured by attention or consigned to neglect; still, amidst the various disasters and disappointments incident to human life, (and of these I have had my share) the consciousness of my having discovered

covered a practicable remedy for the necessities of my fellow-creatures, will, I trust, continue to prove (as it has already proved) my chief consolation and support, and that to the last hour of my life.

Sincerely wishing you success in this, and in every other patriotic undertaking,

I am, Sir,

Your much obliged, and obedient servant,

R. PEW.

Shaftesbury, June 28, 1793.

P. S. The above suggestions paved the way for some observations on the national debt, which probably are worthy the consideration of government.



ARTICLE XVI.

On Fattening with Potatoes, and on the Advantages of Drilling.

[By the Rev. H. J. CLOSE.]

SIR,

PERMIT me first to apologize for my apparent inattention to your queries of the 16th of June, and to assure you, my not receiving your letter (owing to an improper direction) was the sole cause of the delay.

Your correspondent from Ireland wishes me to be as full and explicit as possible, on the subject of feeding cattle with potatoes; it is not in my power materially to elucidate the subject. I continue to practise the same mode of culture as my former letter described, and to use them in large quantities, having tied up and fattened 35 bullocks in one year, with those useful roots. Your correspondent asks how long a beast will be fattening on them; to this no positive answer can be given, so much depends on the condition of the beast when he is put up. But the result of all my experiments tends to prove, that bullocks will fat sooner on potatoes, than on either cabbages or turnips:—190 sheep, out of 200, I fed upon them in one year, fattened beyond my expectation; ten never, I believe, were

were induced to touch them, but were supported upon a small quantity of hay during the winter months; I was not able to assign any cause for the aversion those ten took to roots, on which the other 190 fed greedily and threw surprisingly.

You remind me of my having been formerly a correspondent of your respectable society; believe me, I shall be always ready to communicate any useful intelligence to the public, and shall, at your request, proceed to give my opinion on a subject of the utmost consequence to the community.

It has been long contested by practical farmers, whether the drill or the broadcast husbandry is the most advantageous. Thanks to the ingenious Mr. Cooke for the invention of an instrument, which has given a decisive and certain superiority to the drill system. The above conclusion is not drawn from any plausible theory, but from actual experiments, made on various soils, and in various situations; I have proved its utility in Surry and in Suffolk, upon sands, sandy and clayey loams, or gravels and stiff clays; the superiority in favour of the drill and horse-hoeing system (as recommended by Mr. Cooke) above the common broadcasts amounts as near as possible, on the average, to one year's rent and a half. I shall not trouble you with each particular experiment, but assure you they were accurate, and tried on lands from the yearly rent of 3s. to 30s. per acre. Two hundred pounds
is

is the annual saving in my single occupation in the article of seed-corn only. For a moment reflect what a national advantage would accrue, by the general use of such an instrument! .

• Wishing you, and the society you represent, all possible success in your various attempts for the benefit of mankind.

I am, Sir,

Your friend and servant,

Hitcham-Hadleigh, Suffolk,

H. J. CLOSE.

OCT. 12, 1789.

N. B. This short, but interesting letter should have appeared in a former volume; but from its being taken for perusal by a member of the society, it was thrown out of its proper deposit, mislaid, and, not till very lately by accident recovered.

ARTICLE XVIII.

Value of Land, with the Rise and Fall of the different Publick Funds.

[By Sir THOMAS BEEVOR, bart.]

SIR,

Hetbel, April 2, 1794.

I HAVE transcribed a paper, which has been lately sent to me by a friend, stating and shewing the value which land has borne in this country,

and in what degrees it has risen and fallen with the rise and fall of the different publick funds: of the accuracy of which, having no doubt, I think, it may serve the purpose of more than mere amusement.

The heavy drill-roller, of which I sent a model to the society some time since, is coming fast into a more general use, and serves admirably well for another purpose than it was originally intended for; it is found to reduce the clods on strong clayey lands, when suddenly hardened, and baked by a sharp drought in the spring, beyond the spiky, or the heaviest common roller that can be used.

I am, sir, with much real regard and esteem,

Your much obliged

and obedient servant,

THOMAS BEEVOR.

N. B. Since the above was written, I find the contents of the following table was taken from an account published in one of the common annual pocket-books; nevertheless, may it not be of some utility in a publication of the nature of that you are engaged in?

A Table of Equation of Stock, with the Correspondent Value of Land.

Bank Consol. 3 per Cent.	S. Sea Stock $3\frac{1}{2}$	Bank Consol. 4.	Bank Consol. 5	India Stock 8	Bank Stock 7	Yearly Purchase of LANDS.	Annual Interest per Cent.
3 per Cents. at 60 arecequal	to $3\frac{1}{2}$ at 70	80	100	160	140	20	f. s. d. 5 0 0
$61\frac{1}{2}$ 63	$71\frac{1}{2}$ $73\frac{1}{2}$	82 84	$102\frac{1}{2}$ 105	160 168	$143\frac{1}{2}$ 147	$20\frac{1}{2}$ 21	4 17 6 4 15 2
$64\frac{1}{2}$ 66	$75\frac{1}{4}$ 77	86 88	$107\frac{1}{2}$ 110	172 176	$150\frac{1}{2}$ 154	$21\frac{1}{2}$ 22	4 13 0 4 10 10
$67\frac{1}{2}$ 69	$78\frac{3}{4}$ $80\frac{1}{2}$	90 92	$112\frac{1}{2}$ 115	180 184	$157\frac{1}{2}$ 161	$22\frac{1}{2}$ 23	4 8 10 4 6 11
$70\frac{1}{2}$ 72	$82\frac{1}{4}$ 84	94 96	$117\frac{1}{2}$ 120	188 192	$164\frac{1}{2}$ 168	$23\frac{1}{2}$ 24	4 5 1 4 3 4
$73\frac{1}{2}$ 75	$85\frac{1}{4}$ $87\frac{1}{2}$	98 100	$122\frac{1}{2}$ 125	196 200	$171\frac{1}{2}$ 175	$24\frac{1}{2}$ 25	4 1 7 4 0 0
$76\frac{1}{2}$ 78	$89\frac{1}{4}$ 91	102 104	$127\frac{1}{2}$ 130	204 208	$178\frac{1}{2}$ 182	$25\frac{1}{2}$ 26	3 18 5 3 16 11
$79\frac{1}{2}$ 81	$92\frac{3}{4}$ $94\frac{1}{2}$	106 108	$132\frac{1}{2}$ 135	212 216	$185\frac{1}{2}$ 189	$26\frac{1}{2}$ 27	3 15 5 3 14 0
$82\frac{1}{2}$ 84	$96\frac{1}{4}$ 98	110 112	$137\frac{1}{2}$ 140	220 224	$192\frac{1}{2}$ 196	$27\frac{1}{2}$ 28	3 12 8 3 11 4
$85\frac{1}{2}$ 87	$99\frac{3}{4}$ $101\frac{1}{2}$	114 116	$142\frac{1}{2}$ 145	228 232	$199\frac{1}{2}$ 203	$28\frac{1}{2}$ 29	3 10 2 3 9 0
$88\frac{1}{2}$ 90	$103\frac{1}{4}$ 105	118 120	$147\frac{1}{2}$ 150	236 240	$206\frac{1}{2}$ 210	$29\frac{1}{2}$ 30	3 7 9 3 6 8

ARTICLE XIX.

The Horse and Sweet Chesnut, and the Black Willow, recommended for Planting.

[In a Letter to the Secretary, by BENJAMIN PUGH, esq;
of Midford-Castle.]

MR. SECRETARY,

I WAS so much pleased and entertained at our last meeting, with the two judicious and sensible letters that were then read, respecting timber in general, and the care of woods, that I beg leave to add my small mite, hoping the society may think it worthy of their notice.

I am surprised these gentlemen, who seem to be so well versed in the comparative value of timber trees, take little, if any, notice of the *horse chesnut*, and *sweet chesnut* which trees make exceeding good timber, are certain and quick growers in every kind of soil, and the beauty of the flowers of the former quite equal to the most beautiful shrub in the garden; and as for the duration of the timber, especially the sweet chesnut in the dry, it is equal to the oak; I have seen a large barn that was built of this timber, which had stood some hundred years, and all perfectly sound.

In thickening, or new planting coppice-woods, I should prefer the horse chesnut with the black withey (as it is called in this country) to any other kinds

kinds of wood; from the quick growth of the latter, and from the little experience I have had of it in my own wood, I think I may venture to say it may be cut down *every seven years* for faggots, at which time they will make very good ones:—Specimens of the black withey I have brought to the rooms; a one-year's shoot ten feet, and a four-year's growth near six inches round. Suppose in planting, the seed of the chesnut, and the cutting of the withey, are planted alternately, allowing six feet every way, which I think would be giving them sufficient space. The cuttings of the withey to be about six inches long, to be set four inches in the ground, and two out; and the chesnut in the third year, suppose the beginning of the month of March, to be cut down to within two inches of the ground; it will throw out four, five, or six shoots, or offsets, as the spring advances, and increase after every felling.

Now I am speaking of planting, let me recommend every landlord to oblige the tenant (by a clause in his lease) to assign a spot of ground (suppose half an acre) to be well fenced and ditched, and having a south or a south-east aspect if possible, to be dug up and well cleaned, and lie to mellow; and when duly prepared, to be sowed in strait lines with oak acorns, horse-chesnuts, ash seeds, elm and poplar, the rows to be six feet distant from each other, at least, that there may be room for digging, hoeing, &c. to be constantly kept clean and in order: (the feeds

seeds put in two feet apart from each other) then the tenant should be obliged to plant one of these trees, in the place of every pollard, decayed or lopped tree, the tenant takes down; and when a hedge shall be made new, or an old hedge cut down and remade, let so many of the young trees out of the plantation as the landlord shall appoint, be taken up and planted at proper distances in the hedge, and in time these trees thus planted, will, proclaim their benefit to the landlord and to the public.

Your's, &c.

B. PUGH.

N. B. The black withey makes the best hedge stakes that can be used, because they are strait and handy, and will all grow, whereas all other stakes, in three or four years, rot and become useleſs, *and a temptation to hedge-breakers.*

ARTICLE XX.

On the Reclamation of a Snipe Bog.

[By THOMAS SOUTH, esq; in a Letter to the Secretary.]

DEAR SIR,

Beffington, Aug. 9, 1794.

IN compliance with your request, signified in your favour of the 6th, accept for the seventh vol. of the society's papers, the particulars of a thorough reclamation,

reclamation, or the conversion of a snipe bog, not worth 7s. an acre, into a meadow, promising to be worth 30s. per acre at least: Happy is it, when nuisances can be made profitable! more so when an acre of pasture, lost as such to the publick, furnishes materials to improve the adjacent land, to six times the value of the portion that was annihilated!

In forming the Andover canal which crosses an angle of this estate, about an acre of good grazing ground, valued at 30s. a year, was taken in: the channel being deep, the soil thrown out proved various; loam, malm, gravel, and rubbish; the next ground within a few yards of the spot, was a morass covered with a coarse rushy turf, so tough by the interweaving of its roots, that it yielded to the tread of cattle without breaking under pressure; and consequently their weight, which sunk the various tracks below the general level, raised the interstice between them into the hillocks. During the whole winter, and the greatest part of the summer months, the summits only of these hillocks remained dry; bearing a coarse ordinary herbage, to which the cattle seldom resorted, till drought had rendered the neighbouring pastures bare. This land lay so low between two rivers, that it was deemed almost impracticable to make it healthy. Tempted, however, by the quantity of soil at hand, the experiment was tried, and the plan (which was as follows) succeeded beyond expectation.

The

The hillocks, consisting of a light parenchymous [spongy] substance, were in the first place cut down, thrown together in lines eight or ten feet broad; the water was drained off in the next, and by an open channel conveyed into the river near 200 yards below. The whole ground was then laid out in beds, or oblong compartments about 20 feet wide, having head-lands with furrows to the East and South-west, to receive the soakage of the rivers, and a main drain at the bottom, to convey the water to the distance above-mentioned. This done, a mixture of the loam, malm, and gravel, was laid about 16 inches thick over the inverted hillocks, along the centre of the beds, sloping off each way to their edges. Ditches two feet wide, and a spit and a half deep, were then sunk between bed and bed, communicating with the drain below. The peaty substance thrown out of these ditches was spread over the centre of the beds, so as to form a compost with the loam, gravel, &c. and the ditches themselves were afterwards filled with sheer gravel so high as to remain like furrows to the beds, which, by the addition they had received, were now become ridges of considerable elevation. Having proceeded in this manner through the piece, and given it three ploughings to mix and meliorate the soil, it was sowed, in 1793, with white oats, cow-grass, and Dutch clover; of the former, only three bushels per acre were allowed, the grass being my chief object.

object. The corn, though sowed so thin, produced five quarters to the acre, and the grass is so strong and well set, that there is no such plant to be seen in the neighbourhood. Perceiving that where the hillocks had been cut off, or the turf by any means removed, the ground would not bear the weight of horses, which sunk up to their hocks in the peat, determined me to render the furrows hard and permanent; which is now compleated to my satisfaction, as both small and great cattle depastured there without miring during the heavy autumn rains of last year, and the water speedily ran off above ground, leaving no standing pools in any part whatever.

This improvement commenced in 1791, was much retarded by the incessant rains of 1792, which causing an increased expence by broken days' work, delays, miring horses, &c. raised the cost upon the whole to twelve pounds per acre, viz. 72l. for six acres; yet it will answer well, for the produce of the crop of oats being 36l. clear, leaves 36l. only for outstanding expences. And the improvement of 23s. per acre or 6l. 18s. a year, will pay ample interest for such sum, independent of the credit and pleasure of setting a good example, rendering things tidy and comfortable round me, besides promoting the publick' weal, by increase of pasturage and provender for cattle.

THOMAS SOUTH.

P. S. I have the pleasure to inform you, that the above valuation of 30s. per acre lies within compass, for Mr. Young himself saw the land a few weeks ago, and estimated it at 40s.

ARTICLE XXI.

An improved Pedometer described.

[With a Plate.] —

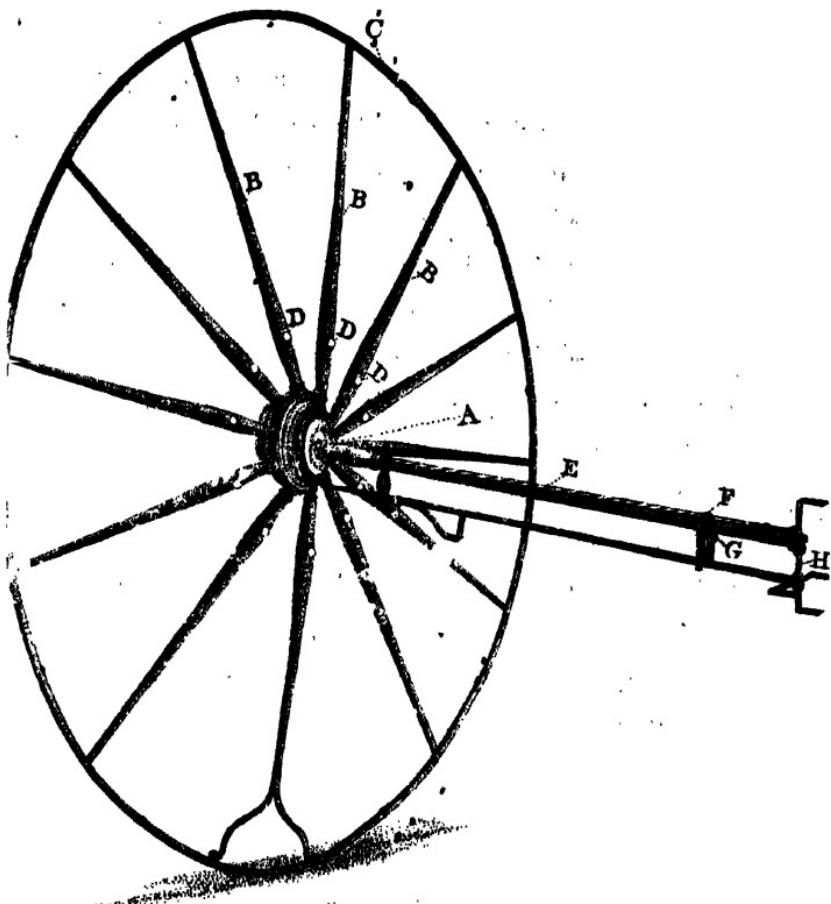
By Mr. L. TUGWELL, of Beverstone.

SIR,

YOU will observe under the article *Pedambulator*, in the Cyclopædia of Chambers, that its proper application is where for measuring roads and large distances, great expedition, and not much accuracy, is required!—This want of accuracy will be obvious enough to every inspector to arise from the too small dimensions of its measuring wheel; it too readily thereby, in its application, adapting itself to the casual inequalities of the surface; and hence the desideratum of some contrivance for admitting a larger wheel for obviating the defect. This, some years since, was attempted by Mr. Edgeworth, whose machine for the purpose seems the most simple that can be conceived; while, however, (simplicity being in mechanics a criterion of excellence, and probably from considering, in addition to the above-mentioned, defect in the old one, its too great complexity) he seems to have gone into the opposite extreme; and, almost through the whole of his own, to have sacrificed utility to an unnecessary degree of brevity.

Mentioning these matters to you some time since, and that I had, from the obvious utility of a perfect machine

AN IMPROVED PEDOMETER,



Presented to the Bath & West of England Society
by Mr. Levin Tugwell, of Beverston.

machine of the kind, contrived a very useful one, on Mr. Edgworth's principle; you desired me again to try if I could not render it still more perfect, and, if successful, to send a specimen to the Repository at Hetling-House.

As in mechanics, the previous ascertaining a defect is as necessary to improvement as, in physick, the determining on the existence of a disease to its cure, I have ventured to submit the annexed specimen for the inspection of the Committee, hoping some one will still point out the improvement I do not see, and, pursuing the same to effect, render it still more deserving the regard of community.

In conformity to the simplicity above-mentioned of Mr. Edgworth's Pedometer, he found it necessary to attempt nothing more in its operations, than the measuring roads, distances, &c. and even for this, unless where the stones had previously been broken, and the roads worn smooth (instances for any continued length rarely to be met with) I found it, on trial, very inadequate.

In the specimen I have now sent you, nothing has been omitted to the rendering it capable of measuring roads in general, with greater facility, accuracy, and expedition, than may be done by any other mode I have seen or heard of; while it also equally excels in the surveying or measuring of lands. By the common mode of measuring these by Gunter's, or any other chain, the progress (comparatively

paratively in respect of that made by the Pedometer) is usually slow; and while it engrosses the constant attention of two or more persons in company, the result is sometimes erroneous. A person using the Pedometer has not only, while at work, no need of an assistant; but while, of himself, he measures with greater accuracy and expedition than is done by the chain, if casually an unemployed companion attend him, he is at liberty for the most part, while the work goes forward, to bear a part in conversation on any indifferent subject.

The idea of land-measuring by this mode arose from an imposition, perhaps, but too frequently practised. A labourer's task-work to be measured, no one was at hand to carry the chain (the usual term) but the labourer himself:—the land measured and money paid, he went to the ale-house, got drunk, and boasted of having outwitted his master, in having shortened the chain, by gathering some of the links in his hand at its fore end.

Hoping this may be added to the collection of useful machinery, lately accumulated in your repository, I take the liberty of thus describing its advantages, and of hinting that if, promoted by the Board of Agriculture, an inclosure of our waste and other lands should become general, it may be found of use in such undertakings.

I am, Sir, respectfully your's,

L. TUGWELL,

Beverston, May 2, 1794.

References to the Plate of the Pedometer.

A.—The stock of the Pedometer.

B, B, B, &c.—Twelve spokes, one end of each inserted in the stock, and the other fastened with a screw to the outward ring, or periphery of the wheel.

C.—Periphery; an iron ring $16\frac{1}{4}$ feet, or one pole in circumference, adapted to Gunter's concise method of arithmetic, and divided into 25 equal parts, corresponding to the links of his chain for land-measuring, &c.

D, D, D, &c.—Twelve small plates, denoting the separate spokes, each including two links of the chain above-mentioned.

N. B. The twelfth spoke is divided at its foot for taking in the odd, or 25th link.

E.—An iron axis, being a screw with 320 circumvolutions, separately marked on an engraved index on one of its sides. In its application, it is screwed fast into the stock of the wheel, and when at work, revolves with it.

F.—A style or alidade, being an expanding screw-nut, embracing the axis, and screwing along it, as the latter revolves with the wheel; and as each revolution of the wheel, when rolling on the surface, describes an exact longitudinal pole, and consequently four of them a chain; the style, hanging pendant, and moving to its proper figure, denotes the length of ground passed over, as divided into chains and poles, on the index of the axis E. and links on the periphery G.

G.—A small adjusting screw, by turning of which the style may be instantaneously moved back to the beginning of the index, when, in land-measuring, the given line has been ascertained in chains, links, &c.

H.—A cross or square, with sights for determining, in land-measuring, the perpendiculars:—suspended at its ends on the axis, and occasionally to be detached therefrom, when used, with a touch only of the finger and thumb. It furthermore acts (by the lower end of the style F. embracing also its standard) in preventing the said style from being carried round by any possible accident with the axis, as it revolves; which, before it was used, had sometimes taken place, and greatly embarrassed the account:—and as the 320 divisions, marked poles on the index of the axis, are calculated for the describing an exact mile, the style F. having passed over them, will then screw no further; but moving round with the axis, takes with it the standard, and striking it on the wrist of the operator, prevents the possibility of his proceeding farther, till he has drawn his hand from between the said standard and the axis:—having, in road-measuring, received the necessary hint, he turns the screw G, puts back the style F to the bottom of the index, and goes on as before.—N. B. The standard of the cross, divided into five lengths, occasionally substitutes the ten-link rod used for measuring offsets, &c. and is also used for small distances inaccessible to the wheel.

ARTICLE XXII.

Observations on Turnip-Cabbage,

No. I.

[TO THE SECRETARY.]

SIR,

Tiverton, Nov. 9, 1792.

ABOUT four years since I sent you a very brief account of the cabbage-turnip, or as it is sometimes called the turnip-cabbage. Having promised you the result of such further observations as I might make upon this plant, I now fulfil that promise, by communicating to you such remarks as I have made upon it in a further acquaintance of four years. It is proper, however, that I should first correct an error into which I had fallen myself, and probably may have led many others. I find upon enquiry, that this plant has been long, though not very generally, known in this country. It was introduced some years ago to the London society, and premiums offered for its cultivation. The result of the experiments then made, was upon the whole very favourable to the plant; yet, like many other valuable discoveries, it has fallen into disuse. It is from a conviction, that it did not merit such treatment, and that it may be cultivated as an autumn or spring feed for sheep to very great advantage, (particularly the latter) that I trouble the society with this letter.

Dr.

Dr. Cullen, author of the *Materia Medica*, has in that publication fallen into the same error with myself. At a late period, subsequent to my former communication respecting it, he speaks of it as a new thing, not yet known in this country. His account of the plant is a very favourable, and, I think, a very just one. But his acquaintance with it had reached no further than as with a delicacy for his table.

In the year 1791, I planted out between 4 and 3000 of these plants into a field, on the top of a hill, on a thin, worn-out, stone-brash soil. The ground was dragged down to a level; some furrows struck at about three feet distance, and a little dung shook into the furrows, which were afterwards closed with a plough. The first dripping day the plants were put out, at about two feet distance in the rows. They took root very readily, and continued to thrive well, notwithstanding the season was very dry. These plants bore the winter, which was rather a severe one, very well, though many turnips on the adjoining land were destroyed. In the spring they were for the most part given to the sheep, which have always appeared to be very fond of them. Part of them were saved for seed, which ripened and were cut about the middle of July. The land upon which those that were given to the sheep grew, as well as the turnip land, was sown to barley; but the former did not appear to be at all exhausted,

more

more than the latter. I think the average weight of the bulbs was about 5lb.; many reached 8 or 9lb. and some few 14 or 15lb.

This year, I again planted out about 4000, in a strong stiff loamy soil, and rather wet and low. Where the ground was driest, the plants have thriven well; but where it was wet, they have made little progress. These were planted out on two-bout ridges, being nearly five feet distant row from row, and about two feet in the ranks. I expect that these plants will not stand the winter so well as those on the hill did. They appear to me to affect a dry situation: an opinion which corresponds with the experiments made by the London Society. In the latter situation, they appear to produce more leaves in proportion to the size of the bulb, than in the former. I think the lower leaves might be cut off late in the fall, and given to young cattle with advantage; as they are otherwise cast during the winter.

I cannot but think that they possess some advantages over the common turnip. They have a strong power of resisting putrefaction, and of course endure the frost and wet; but particularly the latter, better than most plants. They are much more nutritive than the common turnip; and being of a closer texture, and less watery, they contain more food in a given space. By standing up above the ground on a foot-stalk, they are more readily come

at, when the ground is covered with snow. If the ground be in good proof, and they are intended for spring feed, it will be time enough to plant them out the beginning, or even the middle of July: which will give the farmer a long summer to clean his ground. I imagine they may be reserved almost as late in the spring as you please. I have found the bulbs nearly as firm and sweet, after the seed has been cut, as before. Their leaves, not being bitter like those of the turnip, are more readily eaten by cattle. Upon the whole, I cannot but think that they would prove, upon trial, a very valuable article of fodder to the farmer, and as such, I venture to recommend them to the attention of the society. I think it might be proper to offer a premium, to induce farmers to ascertain the value of them by repeated experiments.

The mode of culture is so similar to that of cabbage, that it is scarcely necessary to notice it; as, however, it may be expected that I should do it, I will just mention a few particulars. The earlier the seed is sown in the spring, and consequently the earlier the plants are put out, the better, especially in poor ground. In strong land, and a favourable season, a good crop may be procured by sowing the first or second week in May. If sown ever so early, they never run to seed the first summer, unless here and there one which has run from its sort. In good ground the rows may be, from there

three to five feet asunder, and the plants not less than three feet in the rows. Great care must be taken not to plant them too deep; and when hoed, not to draw the mould too high in their stalks. Strict attention must be paid in selecting bulbs for seed, which should always be the cleanest and handsomest: otherwise they are very apt to sport, as it is termed, or run from their sort. I have taken them up in the spring from the field, and planted them in my garden when they have been sprouting, and the seed has ripened well; but I would prefer letting them remain where they were first planted. It may, therefore, be prudent to plant a small piece for the purpose of seed, and to pull up any irregular or false ones. Of course none of the cabbage tribe should feed near them. I think those intended for seed might be planted closer together, without injury to the crop; by which it will allow for pulling up the bad ones with less loss. If any person should wish to cultivate them in his garden, he will find the method above recommended for the field answer his purpose. The bulbs will be fit for use by October, and may be used till they begin to sprout in the spring, at which time the young shoots are very delicate eating. In preparing for the table, the rind, which is very tough and fibrous, must be entirely taken off, and the bulb cut into small pieces, which must be treated as turnips: they will require to be boiled at least

two, and sometimes three hours, before they will be sufficiently tender. I have always found them best when boiled with meat, especially with salt beef. They give a most agreeable flavour to broth.

A friend of mine, who is going to Jamaica, has undertaken to carry some with him to sea, for which purpose I am inclined to think them well calculated: the result of his experiment shall be communicated to you. I have sent you a parcel of seed, about 12lb. which was saved with great care, and will be sufficient to enable many persons to make experiments; and I recommend it to such persons to prefer a dry elevated situation, even though the land be not so good. If any circumstances should occur, worthy of notice in my further cultivation of this plant, I shall be careful to communicate them to you,

And am, sir;

Your very humble servant,

THOMAS BROUGHTON.



ARTICLE XXII.

*Account of Experiment on Turnip-Cabbage for
the Society's Premium in 1793.*

[TO THE SECRETARY.]

SIR,

I AM making this year, a larger experiment than any I have before made, with a view to ascertain the value of the turnip-cabbage, as a spring food for sheep and cattle, and (as I mentioned before to you) as a candidate for the society's premium on that head. As this experiment cannot yet be considered as complete, I shall reserve myself for a minute account of it to a future time. In the mean while, as the prospect of its success is extremely flattering, I am induced to state a few particulars against the next meeting, with the hope of encouraging many others to make similar experiments upon this plant in the ensuing year.

A piece of wheat stubbs, between two and three acres, lying in a small common field, the soil a free-stone grit, worth about eight shillings per acre, was twice ploughed, cleaned, and dunged. It was then ridged up in two-bout ridges, part having their centers three feet distant from each other, and part only two feet. The plants were all set out on the middle of the ridges, and at the distance of three feet from each other in the rows; but at

three

three different times—the first, seed sown the middle of March—the second, seed sown the beginning of April—the third, the end of April. The season was uncommonly dry; few opportunities offered of planting, or making good the numbers that failed from the drought. On a piece of ground adjoining, I purposed having some common turnips to compare with them; but in spite of all my care, and thrice sowing, the crop was so thin, that the ground was afterwards ploughed up and sown to wheat, to my very great disappointment. As soon as the plants had got firm root, and had advanced a little in their growth, a furrow was turned with a plough from *each* side of *each* ridge, and the weeds on the remaining part of the ridge, not touched by the plough, were cut up with a hoe. In a fortnight or three weeks afterwards, these furrows were turned back again into their places. By which means the land was kept clean at a small expence, and the growth of the plants greatly promoted.

On the second of December I caused three square lug, to be cut in three different parts of the piece, and found the weight to be as follows:

No. I.	One square lug, ridges somewhat more than three feet, plants three feet in the rows, seed sown middle of March,	weight	lbs.
		230	.
No. II.	One square lug, ridges barely three feet, plants three feet in rows, seed sown beginning of April,	weight	- - - - 260

No. III. One square lug, ridges about two feet,	lbs.
plants three feet in rows, seed sown end	
of April, weight - - - - -	260

. . . The inferiority of No. I. was not, I believe, owing to early sowing, but more of that plantation failed than of the others, and no opportunity offering to replace them for nearly six weeks, the plants in the seed-bed were stinted in their growth by the drought, and never threw well afterwards; nearly a fourth of the bulbs in the first lug were of this description. Had it been otherwise, I believe the first would have been the best. I compute the average weight at somewhat more than eighteen tons per acre.

It is remarkable that numbers II. and III. should be exactly equal in weight, the rows in one case being three feet, in the other two feet asunder: but it is worth observing, that the weight of the leaves, in proportion to that of the bulbs, (for I weighed them separately) was greater in those at two feet, than in those at three feet. As soon as this experiment is completed, I shall transmit a particular account of it to the society.

Upon the whole of my experience, I recommend this plant very earnestly to the attention of farmers; and am much mistaken, if it will not be found, under proper management, to be one of the best hitherto cultivated, especially *as a late spring food.*

I recommend

I recommend the earliest season for sowing, if the land can be got ready; but any time in April, or even the beginning of May, will answer perfectly well, if the season be not uncommonly dry at the time of planting: and I advise three feet square as the best distance for the plants. The greatest attention too, should be paid to saving seed only from the very best bulbs.

I am, sir,

Your very humble servant,

THOMAS BROUGHTON.

Twerton, Dec. 7, 1793.

ARTICLE XXIV.

Conclusion of account of Experiment on Turnip-Cabbage.

SIR,

I AM now to complete the account which I began in a former letter, of my last year's experiment on the turnip-cabbage.

On the 19th of December, I took in 40 large wether sheep, weighing on an average more than 25lb. per quarter, the property of a neighbouring butcher. A small piece of the turnip-cabbages was

was hurdled off for them, which they devoured very greedily. Late in the evening they were turned back into a very small paddock adjoining, about $2\frac{1}{2}$ acres, which had been before eaten down bare. The next morning, nearly as much fresh ground was taken into the former pen as would serve them for the day, and the sheep put back to the paddock in the evening as before. This method was followed through the whole of the experiment; excepting that, after a few days, the fresh pen was kept separate from the stale one, and the sheep only suffered to remain in the former, about two hours in the morning, and two in the afternoon; the rest of the day they remained in the stale pen, by which means many stalks, not wholly consumed, were afterwards eaten. I kept these sheep exactly two months; when the quantity consumed was measured, and found to be a trifle more than one acre and a quarter statute measure. Though these sheep were kept, in a fattening way, yet they had no hay given them, twice only excepted: when, after a considerable fall of snow, succeeded by rain, and that by a severe frost, the owner sent a little hay upon a horse, of which they ate but little, finding no difficulty in coming at their green food, in spite of the deep snow. My neighbours were not only struck with the great advantage of this crop over common turnips in this respect; but likewise in wet weather, when the sheep

sheep were able to walk about among them, without the least detriment or waste. It escaped my memory to weigh a few of these sheep when first taken in; but this was done afterwards. On the 6th of January, four sheep were weighed, and the same four again at the expiration of the experiment—the result was as follows:

	S.	lbs.		S.	lbs.	
No. I. weighed	9	4	Jan. 6th,	9	14	Feb. 12th.
No. II. ——	8	8		8	19	
No. III. ——	9	5		9	9	
No. IV. ——	10	11		10	14	

It is to be observed, that through the carelessness of my servant, the sheep were weighed on a full stomach in the first instance, and not half so full in the second. Some of these sheep were killed immediately from the turnip-cabbages, and died very fat, and in the best order. I never saw one of them scour through the whole experiment. I have reason to conclude, that an acre of turnip-cabbages will keep 40 stock-sheep at least two months, without a morsel of hay.

The remainder of the crop was reserved for my own use—part of which was eaten on the ground by my own sheep, and part brought off at different times to serve my cows, horses, and sheep, at home. On bringing them home, I always cut off the leaves, with which I served my cows and sheep, and stowed away the bulbs in the barn and in any open shed. As soon as the leaves of the first load were consumed,

fumed, another load was brought down and managed in the same manner. When all the leaves were gone, we began upon the bulbs, which were cut into pieces, and given to the horses, cows, and sheep, all of which were uncommonly fond of them. The last were consumed about the first week in May, at which time they were as good as ever; and induced me to wish most earnestly that I had saved a much greater quantity. I see no reason to doubt but they might be preserved perfectly good till after haymaking.

In addition to the account of this experiment, it may not perhaps be unacceptable, if I should state the particulars of another experiment I have made on this plant. Concluding that it might be a valuable addition to the list of vegetable sea-stores, I sent two hamper-baskets of them on board a vessel bound for Jamaica. The plants, cut in a dry day, were divested of their leaves and roots, and packed with dry straw in hampers with the stalks downward. The following particulars were communicated to me by the Captain on his return.

December 4th, 1792, two were dressed in the following manner: The tops and stalks being cut off, and the rind stripped off, they were cut into slices, and boiled in *fresh* water, until they were soft, which usually took half an hour; they were then pressed and brought to table as mashed turnips, for which they were an excellent substitute, but

but much sweeter. We continued to use them in this manner, till towards the end of the month, when the weather becoming much warmer, we observed them not to be so good, and found that those which were hung up near the cabin-windows, in the pantry, and in the hair-case, began to wither and shrivel, and appear yellow. Those which remained in the basket, with their roots downward, were in a much better state. On the first of January 1793, some of those in the latter state were dressed as follows:—The roots and tops being taken off, but the rind left on, they were boiled in *salt* water with the salt beef; the salt of which did not appear to have affected the inside much, after boiling three hours; they were then taken up, and the inside scooped out of the top, and were found to be much sweeter and better, and the colour yellower, than any of the former ones boiled in fresh water.

In addition to these minutes of the Captain, I have to remark, that three or four plants, which remained when they arrived at Kingston, were delivered to my brother Dr. Broughton; who hung them up in his pantry. Three weeks after they were placed there, he observed one of them to throw out some green shoots; which, though divested of its roots in England, he planted in his garden, where it took root, and was growing very luxuriantly at the time the vessel left the island, nearly three months from the time they were cut in England.

I conclude

I conclude from these circumstances, that they might be used to great advantage as a vegetable sea-store; and that they would afford a most wholesome and agreeable food for sailors through long voyages, at a time when every other fresh vegetable was entirely spoiled.

A neighbour of mine intended to have claimed the premium this year, for the cultivation of this plant: but unfortunately, more than two parts in three of his crop have been destroyed by the underground grub. My crop has likewise suffered much from this cause, but not in so great a degree as my neighbour's.

In planting out two acres this year, I left about a fourth of the land undunged, the rest was well manured with rotten stable dung. To my great surprize, I found that those which were planted without dung thrived quite as well as those planted in the manured part of the field. The land was a worn-out wheat stubb, on a thin free-stone grit: and I am inclined to think, that no other plant of the cabbage-or turnip tribes would come to such perfection on the same soil, unmanured. If any thing of importance should occur in my future cultivation of this plant, I shall communicate it to you,

And am, your humble servant,

THOMAS BROUGHTON.

Twerton, Nov. 8, 1794.

ARTICLE XXV.

A Method of Potatoe Management for preventing the Curl.

[In a Letter to the Secretary.]

SIR, . . . Bodmin, Nov. 7, 1794.

IN reply to your favour of the 5th instant, my mode of potatoe tillage is as follows:—If dry weather in March, I begin to till my early crops, known here by the name of the red-nose kidney. The fairest and best-shaped potatoes are carefully picked out from the others, and cut in small pieces about the size of half a walnut; some contain one eye, others two. The ground being in good tilth by often ploughing, I dress according to the strength of my grounds, from 20 to 60 loads per acre, of a compost of scrapings of the road, head-ridges, and farm-yard dung; when the plants are about four or six inches high, they are hand-hoed; and if any curled ones appear, they are carefully rooted out, together with the lets that bare them; when about a foot high, they are again weeded, and the curled plants, if any remain, are carefully rooted out. It is also necessary to look them over just as they are coming into blossom, and root them out if any curled appear.

I have for twelve years past tilled from six to ten acres for the market yearly. Those intended as seed

seed for my general market crops the ensuing year, are tilled at a distance from any other potatoe crop, and managed as above-mentioned. Since I have practised this mode, which is about seven years, the curled disease hath not injured my crops. My potatoes have been better than my neighbours. In the cheapest time, I never sell under threepence per gallon, which weighs ten pounds, or at the rate of six shillings per sack of 240lb.

The late crops are the Irish red, or painted Lord, tilled in April: they produce very plentiful crops, and continue very good from the beginning of December, till the kidneys are fit to draw, which is about the first or second week in June. I have tilled different ways, some by drilling about two feet apart, and twice or thrice earthed up with the double-mould plough: some in ridges five feet wide, leaving between each ridge about 18 inches of ground not tilled, which is thrown between the plants after hoeing: others I have tilled throughout the field, about ten inches asunder between each plant. Many of this last tillage get green and not fit for use. The two former modes answer best with me; if the crops are kept clean about 100 sacks in the average. In some ground I have had 140 sacks per acre,

I am, Sir,

Your very obedient servant,

JAMES CHAPPLE.

ARTICLE XVI.

A particular Return of an Experiment made in Sheep-Feeding.

[By JOHN BILLINGSLEY, esq.]

THE diversity of opinion which has long prevailed, respecting the most profitable breed of sheep, induced me, in the year 1792, to endeavour, by fair and unbiased experiment, to rescue the subject, if possible, from that degree of uncertainty in which it seemed to be involved.

A fair opportunity presented itself at the society's general meeting in December 1791. Two farmers of eminent rank in the breeding line, one of whom was a warm partisan in behalf of the new Leicester, and the other of the Cotswold sheep, agreed to submit to the following experiment under my guidance and direction: namely, that five two-tooth wethers (sheep about $1\frac{3}{4}$ year old) of their respective stock, should be sent to my farm the ensuing January; that they should be kept together one whole year, be regularly folded every night, and in all respects treated alike. That they should be killed at the society's annual meeting in December, and that a public testimony should be given of the merit or demerit of each.

A trial so fair could not fail attracting the notice of all persons interested in the event, and a propos-
al

sal was made and seconded, that other sorts of sheep to which any of the company might be partial, should be added, for the purpose of ascertaining their respective merits.

Accordingly, six sorts were sent to me in the beginning of January 1792, viz.

5 Leicester from Mr. More, of Charlote, Warwickshire.

5 Cotswold from Mr. Pacey, of Northleach, Gloucestershire.

5 South-Down from Mr. Gale, of Stert, Wilts.

15 of the polled breed.

5 Dorset from Mr. Hix, Castle-Cary, Somerset.

5 Wilts from Mr. Tinker, Chittern, Wilts.

5 Mendip from Mr. Parsons, Elagdon, Somerset.

15 of the horned breed.

With a view of proceeding regularly and impartially in the experiment, I had the whole lot weighed after twelve hours confinement without food. This was done on the 3d of January 1792, and the weighing was continued regularly every month till the time of their death. The result will appear in the following tables; attested by

James Jordan	Joseph Horler	Jo. Emery
James Chappell	John Hawkins	N. Reynolds
George Selway	Tho. Loxstone	George Watts
Thomas Huish	James Loxstone	J. Thorn.

THIRTY SHEEP WHEN WEIGHED.

1792.

Leicestershire.

Mr. MOORE.

No.	Jan. 3.	Feb. 7.	March 3.	April 3.	May 8.	June 4.	July 6.	Aug. 10.	Sept. 5.	Oct. 12.	Nov. 8.	Dec. 8.
No. 1 -	117	107	110	114	116	114½	99	109½	114	120½	124½	126½
2 -	129	118	117	125	130	126½	132	137	139	146	152	152
3 -	139½	129	126	128	134	134	137	141½	145½	154	161	162
4 -	145	136	135	131	137½	143½	140½	142	146	146½	151½	155½
5 -	134	121	120	120	134	138	139½	139½	145	147	156	164½
	654½	611	608	601½	638½	661½	655	640½	679	692	728	762

Glostershire.

Mr. PEACY.

No.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
1 -	124	123	131	149	151½	152	154½	159	165	169	174	175
2 -	152	150	161	158½	174	182½	187½	196½	182	198	209	214½
3 -	139½	134	149	141½	155½	163	161½	162	159	158	170	178
4 -	133½	126½	143	126½	137	145	150	156½	160	175½	172	177½
5 -	148½	144	149	139	150½	163	165	169	166½	167	193	198
	697½	677½	733	699½	766	805	810½	829	841	866	931½	952½

Increase 25 lb.
Wool, 36 lb. 2 oz.
Increase in 12 months 97½ lb.
Wool, 36 lb. 12 oz.

THIRTY SHEEP WHEN WEIGHED.

1792.

Suffex.

Mr. MIGHILL.

No.	Jan. 3.	Feb. 7.	Mar. 13.	April 3.	May 8.	June 4.	July 6.	Aug. 10.	Sept. 5.	Oct. 12.	Nov. 8.	Dec. 1.	Dec. 8.
No. 1 -	99½	93	90	87	dead.	110	112	115½	119	120½	126½	126½	126½
2 -	89	87	93	90½		101	105	115½	123	126	135	132½	132½
3 -	97½	92	95	97		107½	112½	120½	110	116	123	134	136
4 -	97	90	92	97½		105	109	111	109	123	129	126½	127½
5 -	95½	.94½	.99	99½		478½	456½	469	471½	446½	457½	491½	515½
													522½

<i>Wiltshire.</i>													
Mr. GALE.		Ib.		Ib.		Ib.		Ib.		Ib.		Ib.	
No. 1 -	110½	113½	118	121	128½	144	150	146	153½	163½	176	184	183½
2 -	110	112	125	125½	133	141	151	154½	159½	146	160	164½	165
3 -	108½	108½	108	log	broke	123	131½	131	141½	148½	159½	170	170
4 -	119	123	130	123	135	138½	151	147	146½	153	165	168½	166½
5 -	111½	109½	123	124	137	143	151	140½	155½	161	172	178	175
	559½	566½	604	493½	543½	680½	734½	719	756½	772	832½	865	865

Wool, 19 lbs. 8 oz.
 Wooll of 4 Sheep, 143½ lbs.
 Increase, 143½ lbs.
 Increase, 300½ lbs.

THIRTY SHEEP WHEN WEIGHED.

1702.

Dorsetshire.

Bred in SOMERSET.

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
134	134	147	144	154	162	166	173	171	182	185	188	188
122	123	133	134	142	148	153	154	154	156	180	180	180
125	124½	137	134	146	153	155	159	164	165	174	177	177½
139	141	149	147	153	165	173	176	179	181	190	199	199
126	124½	133	132	145	151	159	165	165	166	172	176	177
645	647	697	688	758	79	813	827	838	848	885	912	921½
lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
76	73½	86	86½	93	98	103	106	109	114	118	118	118½
75	74½	81	81	92	94	98	95	97	108	110	110	111½
88	88	97	94	103	109	118	113	121	126	132	135	137
84½	88½	96	97	107	112	120	114	118	124	134	140	140
83	84½	89	93	96	105	106	112	116	125	132	132	129
406½	414	449	446½	488½	513	545	534	558	580	614½	636	635

Mendip.

MR. PARSONS.

No. 1

2

3

4

5

5

1

Uninfluenced and unbiased, I waited with anxiety the result of an experiment, which I considered as fraught with consequences of the first importance to the breeding counties of this kingdom. And if it has not been so conclusive as might have been wished, no blame, I trust, is imputable to me.

I cannot agree in opinion with the gentlemen unto whom the examination of my sheep experiment was committed. If I recollect right, they gave the preference to the South-Down, and after them to the others in the following order, viz. Gloucester, Leicester, Mendip, Wilts, and Dorset.

Now it appears to me from the nett produce, and also from the quantity of food consumed, that either the South-Down or the Mendip should take the precedence, and that they should rank thus: South-Down or Mendip, Dorset, Gloucester, Leicester, Wilts. The difference in the value of the skin and fat is not sufficient to alter this conclusion.

At first view the Gloucester appear to produce most profit, but when it is considered that they ate nearly one-quarter more food than the Mendip, and one-eighth more than the Dorset, such an inference would be erroneous.

To the nett profit should be added four or five shillings per head for manure, as they were regularly folded.

I think the long wool was over-rated in comparison with the short.

The

The result of this experiment was not so favourable to the Leicester breed as at its commencement I thought it would be.

They were sent in high condition, and had from their appearance been exceedingly well kept. The change of food and climate appeared to affect them more than the other sorts, and though they were fed with hay of prime quality, and turnips perfectly sound and sweet, they invariably lost weight the first four months; nor did they in the subsequent summer months exhibit any great progressive improvement, as the statement plainly shews: one of them, indeed, appeared by his coat to be unhealthy, and this was confirmed at his death by an apparent defect in the lungs; and consequently some allowance must be made for this circumstance.

We were also told by the great breeders of the North, who attended at the society's annual meeting, when they were slaughtered, that Mr. Moore had not done justice to his county, for that the sheep he sent were the worst of the kind they ever saw. If this be the case, Mr. Moore is surely to be blamed; for as he is one of the Tup Society, he could not be at a loss for a good sort, even on a supposition that he had none of his own.

The Gloucester or Cotswold sort (the sheep immediately in competition with the Leicester) were the property of Mr. Peacy of Northleach. They appeared to me to be the offspring of a cross with the

the Dishley or new Leicester breed, and consequently approaching very nearly to the same species, only in a larger frame; they consumed more food, grew more, and seemed to be a hardy, useful sheep.

The Wiltshire were a tall, bony, thin-carcased sheep, fit to walk two or three miles to a fold, and to be kept till three or four years old for the purpose of manuring a down farm; they ate ravenously, increased greatly in size and weight, but did not fatten.

The Dorset, the South-Down, and the Mendip approach nearly to an equality in point of profit, and may be considered as valuable sorts both to the breeder and the grazier; but were I to take my choice of a flock, calculated to endure severity of climate and scantiness of pasture, I should prefer either the South-Down, or the best sort of the native Mendip. And in this idea I am justified by observations made in the course of this experiment.

In the winter season, when the Leicester, the Cotswold, the Wilts, and the Dorset sorts, were unceasingly devouring hay and turnips, the South-Down and the Mendip were traversing the field in search of the scanty pittance of grass then to be found, and I verily think that their wintering was not worth as much as the others by three or four shillings per head.

These sorts (particularly the Mendip) are susceptible of great improvement, both in the carcase and

and wool, by a more judicious selection of rams, and by a more ample provision of food for the ewes and lambs during the months of March and April, at which time, according to the present plan, they are in a state of starvation.

I have now stated, and I trust with impartiality, the rise, progress, and result, of this experiment; and I now leave my readers to their own determination, concluding with a sincere wish that further trials may be made, by which the conclusion drawn from this may be either confirmed or contradicted.

I am, Sir,

Your obedient servant,

J. BILLINGSLEY.

End of the Seventh Volume.

GENERAL INDEX.

TO THE

SEVEN VOLUMES

OF THE

Bath and West of England

SOCIETY'S PAPERS,

ON

AGRICULTURE, PLANTING, &c.

GENERAL INDEX

TO THE

SEVEN VOLUMES.

The Index of Vol. I. agrees with the Third Edition, and that of
Vol. IV. with the Second Edition.

		Vol.	Page
A GRICULTURE, the origin and pro- gress of, in different ages and nations	<i>Mr. E. Rack</i>	2	314
state of in the Isle of Wight	<i>the same</i>	1	35
Abele, the rapid growth of	-	6	23
<i>Acer saccharinum</i> of America, propa- gation of	-	6	157
Agriculture, proposals for the improve- ment of	<i>Rev. W. Lamport</i>	1	263
hints relative thereto,	<i>S. B.</i>	2	265
cursory remarks on some branches of	-	3	221
the improvements therein, within the last 50 years	-	5	1
Agricultural tour into Suffolk and Surry	<i>R.P. Anderdon, esq;</i>	6	318
Agriculture, extracts from a general view thereof in <i>Dorsetshire</i>	<i>Mr. J. Claridge</i>	7	66
of <i>Wiltshire</i> , extracts from a general view thereof	<i>T. Davis, esq;</i>	7	113
extracts from a general view thereof in <i>Gloucestershire</i>	<i>Mr. G. Turner</i>	7	222
Alder, observations on	-	6	25
American Buffalo, observations on	<i>Mr. G. Turner</i>	7	56
Animal substances, the most powerful promoters of vegetation	-	3	184
<i>Apocynum</i> , or Dog's-bane, stuffs made from thence	<i>W. J.</i>	2	111
Apples, degeneracy of	<i>Mr. D. Grimwood</i>	4	248
grafted on white thorns	<i>Mr. J. Wagstaffe</i>	6	132
a particular kind described	<i>Mr. J. Holt</i>	6	161
some thoughts on	-	7	29P
Apple-blossoms, to preserve from injury	<i>Mr. C. Gullett</i>	4	202
Apple-trees, the cultivation of	<i>Mr. R. Samuel</i>	4	244

		Vol.	Page
Apple-trees, the depravation of	Mr. Gillingwater & Mr. Wagstaffe	4	256
— method of raising	Mr. J. N. Morse	6	152
Araule farms, improvements of	Mr. J. Wimpey	5	43
— lands, how to lay down o grafts	J. S.	2	120
— lands, cultivation of in Dorsetsh.	-	7	80
Ash, the raising of, in boggy lands, and on the sides of steep hills	Mr. J. Fletcher	1	131
Ash, the planting of in boggy lands	Mr. E. Rack	1	165
— improved method of planting	W. K. B.	5	273
— observations on	-	6	26
Ashes, the virtues of, as a manure	J. B.	2	70
Barberry, observations on	-	3	38
Barley, Siberian, account of	Rev. Mr. Horwman	1	108
— cultivation of	J. S.	2	96
— the management of for seed	Mr. W. Copland	2	386
— the steeping of before sowing, recommended	Mr. J. Chapple	3	326
Barley, the increase of	Sir J. Anstruther	3	379
— comparative view of crops drilled and sown broad-cast	the same	3	397
Barley, number of corns in a bushel	-	3	349
Barn, a model of one described	Mr. H. Dobson	3	359
Barren lands, the planting of with wood	R. E.	2	350
Beans, the setting of preferable to sowing	-	1	107
— a new sort from Holland recom- mended	Mr. J. Sargent	2	253
Beans, culture of with turnips	R. P. Anderson, esq;	3	125
— with turnips, observations on	Mr. T. Pavier	3	142
— and turnips, in alternate rows, account of	Mr. J. Bull	3	278
Beans, experiments on the drilling of	G. Winter, esq;	3	285
— number of in a bushel	-	3	491
Beech trees, observations on	-	3	40
Bees, hints for the improvement of	Mr. J. Keys	5	319
Burdock, observations on	-	3	35
Bog, the reclamation of described,	T. South, esq;	7	326
Borage, observations on	-	3	35
Bread-corn, &c. a letter thereon	Dr. Tiffot	1	315
Bread-corn, bread, &c. observations on Dr. Tiffot's letter on these subjects	Mr. J. Wimpey	2	256
Bridewell at Wymondham, description and regulations of	-	3	243
Broom-grafts, observations on	-	3	33

		Vol. Page
Bryony and Bindweed, destructive to quick-hedges	- - - - -	2 216
Buckthorn, observations on	- - - - -	3 36
Buck-wheat, a preparation for a wheat-crop	- - - - -	1 25
Buck-wheat, sown after turnip-rooted cabbage	- - - - -	3 120
Buck-wheat, with wheat and potatoes, the culture of	- - - - -	N. Bartley, esq; 3 308
Buck-wheat, experiments in its culture	the same	3 335
Buck-wheat, the cultivation of	a Gentleman Farm.	4 216
Buffalo, observations on	- - - - -	7 56
Burnet, a healthy grass for sheep	- - - - -	2 58
— the culture and advantages of	H. D.	2 129
— observations on	- - - - -	3 34
— culture of	- - - - -	4 294
Burnbaiting condemned	- - - - -	J. Billingsley, esq; 1 214
Bernt ears in wheat, sundry letters on	Farmer Slouch and others.	7 275
Bush-vetch, the culture of	- - - - -	Rev. G. Swayne 3 71
Butter, observations on the making of	Mr. J. Hazard	3 146
— observations on the churning of	Rufus	3 334
— and cheese, observations on	- - - - -	4 168
— an excellent method of making	- - - - -	5 173
— the best method of making	Mr. J. Twamley	6 294
Butterwort, observations on	- - - - -	3 32
Cabbages, excellent for fattening cattle	- - - - -	1 17
— turnip-rooted, a valuable spring crop	Sir T. Beevor, bt.	3 489
— account of	Mr. H. Fagg	4 341
Calves, the weaning and rearing of	Norfolk Agr. Society	1 159
— the rearing of without milk	T. B.	2 155
— ditto	Mr. T. Crook	5 465
Canary seed, profits of	- - - - -	4 285
Carrots, the culture of	J. Billingsley, esq;	1 214
— ditto	J. B.	1 231
— proposals for experiments, to estimate the advantage of cultivating them	A. Young, esq;	2 1
Carrots, their value ascertained	the same	2 187
— the culture of	Mr. J. Kirby	3 84
— a valuable crop of	- - - - -	3 320
— advantageous food for cattle	- - - - -	5 230
— and cabbages, profits of	J. Billingsley, esq;	2 227
Cart, the lightest, cheapest and handiest	Dr. Anderson	5 468

		Vol.	Page
Cattle, cure for the epizooty or contagious distemper in	Mr. Moreau	1	120
Cattle of Dorsetshire described		7	75
Cattle and sheep, advantages of crossing the breed	Mr. B. Smith	2	363
Chalk, a lasting manure		1	37
— a manure for clay and sand soils	H. D.	2	302
Cheese, observations on the making of	Mr. J. Hazard	3	157
— Parmesan, method of making	Mr. B. Pryce	7	63
Chemistry, applicable to agriculture	A. Fothergill, M.D.	3	58
Chestnuts, the horse and sweet, recommended for planting	B. Pugb, esq;	7	324
Chickweed, observations on		3	38
Clay land, course of crops for	J. L.	2	62
— the management of	an Essex Farmer	2	136
Claying and marling, improvement of land		1	59
Clover, the cultivation of	J. B.	1	49
— the management of	W. E.	1	171
— observations on		4	213
— the cultivation of	Dr. Anderson	4	229
Cochineal in North-America		7	61
Cockchaffer, observations on	Mr. E. Rack	1	258
Comb-pot, description of	Mr. J. Ashman	4	262
Common fields and common meadows, the origin of		7	122
Common lands, general custom of feeding them, in Wiltshire		7	122
Common lands, remarks on the inclosing of		7	151
Common-field husbandry, disadvantages of, described		7	151
Composition for colouring poles, gates, timber-work, &c.	W. T.	2	114
Copper, poison of	Dr. Fothergill	5	387
Copper vessels, the use of, dangerous in kitchens and dairies		5	405
Coppices, method of planting new ones		7	11
Coppice-wood, best times for cutting		7	12
Coriander seed, observations on		4	280
Corn stubble rake, description of	Mr. G. Boswell	1	44
Corn, pulse, and grain, mode of cultivating in Gloucestershire		7	227
Cottages, sundry plans & estimates for	T. Davis, esq;	7	294
Couch-grafts, observations on		3	33
Cows, hints on the breeding & choice of	Mr. B. Axford	1	206

	Vol.	Page
Cows to make good milkers -	2	298
— hornless Suffolk breed described	3	300
Cow clover and cow wheat described	2	223
The same -	Mr. J: Wagstaffe	226
Cow-parsnips, observations on	-	37
Crops, usual course of in Norfolk -	-	1
— course of in the Isle of Wight	-	1
• • in Berkshire -	-	1
— on clay land --	J. L.	2
— on strong land,	-	2
— the necessity of suiting to the land	Mr. J. Wimpey	4
— the same	-	5
— the beneficial succession of	-	5
— the rotation of -	Rev. C. Onley	5
— rotation of in Gloucestershire	-	7
Curtis Thomas esq; a tribute to the memory of	Mr. E. Rack	3
Cyder, method of making -	-	6
Cyder-wine, method of making -	R. Stevens, esq;	5
— observations and experiments on	Dr. Fothergill	5
Cyder and perry, remarks on -	-	5
Dairy farms, superior to arable ones	T. Davis, esq;	3
On the same subject -	J. Billingsley, esq;	3
Dairy house, cleanliness recommended in	-	3
Dairies, danger of using lead or copper vessels therein -	Mr. T. Hayes	4
Dairies, the improvement of -	Dr. Anderson	5
— in Dorsetshire, account of	-	7
Deep ploughing, experiments on	-	4
Dog's-bane [Apocynum] stuffs made from	W. J.	2
Double drill plough described -	Sir J. Anstruther	2
Drag, description of -	Mr. R. Treffry	4
Draining, observations on	-	7
Ditto -	-	7
Drill husbandry, an acquisition to agriculture	-	2
Drill husbandry, experiments in -	Sir J. Anstruther	4
— superior to broad-cast	H. L.	2
— and broad-cast, comparison between	-	7
Drill-machine, description and use of	Rev. J. Cooke	3
— account of -	Mr. G. Barnes	4
— description of -	G. Winter, esq;	4
— ditto -	-	5
		467

		Vol.	Page
Drill-Machine, reflections on	- Mr. J. Wimpey	5	57
Drilled corn, ascertainment of crops reaped in the years 1786 and 1787	- Rev. J. Cooke	4	325
Drilling, experiments on	- Sir J. Anstruther	5	288
Drill-roller, description of	- Sir T. Beevor	5	419
Drill husbandry, details on	- Mr. J. Wimpey	6	125
Elder, observations on	- - - - -	3	37
Elms, for fences, method of raising — the growth of	- - - - -	1	90
— a profitable timber	- - - - -	6	11
Epizooty, or contagious distemper among horned cattle, the prevention and cure of	- Mr. Moreau	1	120
Essex husbandry, observations on	- Rev. C. Onley	3	91
Estates, hints for the letting of	- - - - -	2	140
Experiments in husbandry	- Mr. N. Bartley	4	27
Fallows for wheat, manuring therof	- - - - -	1	90
Fallowing, beneficial effects of	- - - - -	2	26
Fallows, improper management of, reprehended	- - - - -	2	271
Farming, the mode pursued by a Member of the Society	- T. L.	1	82
Barn-yard dung, the management of	A. Young, esq;	3	1
Ferns, mode of cultivating	- Rev. C. Onley	3	44
— proper size of	- - - - -	7	174
Farming-stock of Wiltshire described	- - - - -	7	187
Feathers, a manure for wheat land	J. B.	1	130
Fermentation, a principal agent in vegetation	- - - - -	3	179
Fern-ashes, a manure for wheat land	Mr. T. Pavier	1	113
Fertility of a piece of ground at Wantage	Mr. Price	2	21
Field culture, the successful introduction of new articles therein, and the advantages resulting from thence	- - - - -	5	17
Field mice, remarks on	- Mr. J. Wagstaffe	6	127
Fif, observations on	- - - - -	6	32
Flax, the culture of	- - - - -	4	277
— the watering and management of	Mr. J. Gray	5	297
Flax and hemp, the culture of	a Dorsetshire Gent.	2	378
— ditto	Mr. J. Ellerker	4	261
Floating & draining land, a machine for	a Wiltshire Gent.	1	126
Flote fescue, observations on	- - - - -	3	33
Fly on turnips, how to drive away	- - - - -	1	91
Friendly Societies, utility of	J. B.	2	107

		Vol. Pag
Furze, a food for horses and cattle, with the description of a machine for bruising it	Dr. Anderson	5 134
Glauber's salts, extracted from the rub- bish of an old furnace	Rev. G. Swayne	3 51
examination of	Dr. Fothergill	3 55
Gloucestershire, divisions of landed pro- perty there		7 223
Goggles, in sheep, account of	a Wiltshire Gent.	1 42
method of preventing		7 246
Goose-grafts, observations on		3 34
Grain, the loss of weight, in keeping	Mr. J. Hole	6 167
the amazing increase of, by dividing and transplanting its roots	R. B.	2 157
Grafting, several methods of perform- ing it		6 156
Grafs, a peculiar species of, at Or- cheston St. Mary, in Wiltshire	Gent. of Dorchester	1 95
Grafs seeds, account of specimens sent	Rev. G. Swayne	2 76
crops, improved by changing the seed		2 113
Grafs lands, how to lay down from arable	J. S.	2 120
Grafs, the best time of mowing		2 260
Graffes, the manner of cultivating the Guinea and Scotch sorts, in the West-Indies	Mr. J. Spooner	5 282
Gromwell, observations on		3 35
Ground-ivy, observations on		3 40
Half husbandry, account of	Rev. J. H. Close	3 67
Hand and horse-hoeing of turnips, ob- servations on		3 126
Harrow, a description of	Mr. R. Treffry	4 330
Health of persons employed in agri- culture, the preservation of; and the cure of diseases incident to that way of life	Dr. Falconer	4 347
Heath ground, the cultivating of	G. L.	1 116
observations on		3 38
Hemp and flax, the culture of	a Dorsetshire Gent.	2 378
ditto	Mr. J. Ellerker	4 261
Hoeing, the advantages of	Mr. J. Hazard	5 278
Holly, observations on		3 34
Horse-hoeing, recommended		5 438
		Horses

		Vol.	Page
Horses and cattle in Dorsetshire described	-	7	74
Husbandry in Norfolk, brief account of	Gent. near Norwich	1	19
miscellaneous thoughts on	Mr. J. Franklin	6	283
comparison between the drift and broad-cast in Wiltshire	-	7	146
Husbandry, sundry beneficial practices therein recommended	-	7	163
ditto	-	7	202
Jerusalem Artichokes, expence per acre	-	4	279
Implements in husbandry, invented and improved	-	5	7
Inclosures, remarks on the planting of	E. C.	6	299
Insects on fruit-trees, how to destroy	Rev. Mr. Sanders	3	392
Isle of Wight, state of agriculture there	-	1	35
nature of its soil	-	1	36
Ivy, observations on	-	3	37
Ladies' bed-straw, observations on	-	3	34
Lambs, a particular disease incident to them	a Norfolk Farmer	1	103
Lambs, ill effects of a wet season to	-	2	261
Land, its value compared with the rise and fall of the publick funds	Sir T. Beevor, bt.	7	321
Larch, observations on	-	6	274
Larkspur, observations on	-	3	40
Lead, poison of	Dr. Fothergill	5	351
Lime, the nature and effects of as a manure	C. H.	2	175
Lime tree, observations on	-	3	39
Live stock in Wiltshire, observations on	-	7	187
Lucerne, preferable to other grass for horses, cows, &c.	-	2	59
Machine for floating and draining land for communicating motion at	a Wiltshire Gent.	1	126
a distance	J. C. Hornblower	4	308
Madder, the cultivation of	J. M.	4	293
Madrep, or Cow-parsnip, observa- tions on	-	3	37
Malt-dust, manure for meadow land a manure	-	1	23
Mangel-Wurzel, observations on	Rev. Mr. Lampert	3	391
ditto	Sir T. Beevor, bt.	4	299
experiments on	Dr. Anderson	5	146
	Rev. B. Bransford	5	308

		VOL.	PAGE
Mangel-Wurzel, experiments on	J. Bernard, esq;	5	316
ditto	Sir T. Beevor, bt.	5	417
best method of planting	Mr. J. Wimpey	6	106
observations on	J. Franklin, esq;	6	139
properties and use of	Mr. Martin	7	85
Manufactures, account of, in Wiltshire		7	213
Manures, improvements effected by means of		5	14
Manuring land, a table for	Rev. J. H. Close	3	344
Maple sugar of America described	Mr. T. Clifford	6	311
Marle, its use and effect	a Gentleman Farmer	1	62
Marling of Land in Norfolk, described		1	21
Marling and claying, improvement of land		1	59
Meadows, watering of	R. P. A. and others	2	142
Meadow land, the improvement of	Mr. R. Locke	5	201
Meat, to preserve from putrefaction		2	300
Milk, the increase of by Sainfoin	J. B.	1	163
— sundry valuable aphorisms on		5	73
Milk-house, necessary requisites of		5	87
Milk-thistle, observations on		3	40
Mill for separating the corn from the husk, a description of	Mr. J. Winslow	3	396
Minerals in America, various		7	60
<i>Mnyum moss, &c.</i> ill effects of on sheep and cattle	W. B.	1	163
Mowing-cabbages, observations on	Sir T. Beevor, bt.	6	101
Mustard, culture of, &c.	Rev. C. Onley	4	212
Nectarine, the culture of	T. South, esq;	6	64
Norfolk husbandry, brief account of	a Gentleman	1	19
— course of crops		1	21
— divers articles of, described	T. B.	2	93
— a chart of	a Gentleman Farmer	2	304
Norfolk-plough; description of	Mr. G. Lovewell	2	356
— a remark on	J. Billingsley, esq;	3	393
Orchards, the success of fumigating	Mr. C. Gullett	4	205
Oak, a remarkable one in Langley wood		6	8
ditto near Romsey		6	33
ditto at Dibden		6	42
ditto at Oakley farm		6	44
Oak-timber, queries and answers thereon		6	94
— observations on the sup- posed scarcity of		6	177

		Vol.	Page	
Oak-timber, considerations on	- - - - -	6	264	
— ditto	- - - - -	6	270	
Oats, number of, to a bushel	- - - - -	4	287	
— experiments on	- - - - -	3	491	
— and grass seeds, mode of raising	<i>C. T.</i>	1	154	
Observations on the Society's Premiums	- - - - -	2	192	
— on fiddry letters in vol. iii. <i>Rev. C. Onley</i>	- - - - -	4	170	
Oil manure, described	- - - - -	1	154	
Old grain, vegetation of	- - - - -	S. Smith, esq;	5	464
Oxen, preferable to horses in agriculture	- - - - -	<i>R. Heddington</i>	2	279
Paring and burning land, considerations on	- - - - -	7	157	
— ditto	- - - - -	7	240	
Parsnips, the culture of	- - - - -	<i>Mr. J. Hazard</i>	4	250
— benefit of cultivating	- - - - -	<i>by a Lover of Geographical pursuits</i>	4	293
Pears, grafted on white thorns	- - - - -	6	132	
— the saccharine quality of	- - - - -	<i>Mr. J. Wagstaffe</i>	6	135
Pease, drilling of	- - - - -	<i>Mr. T. Parker</i>	1	144
— number of in a bushel	- - - - -	3	491	
Pedometer, described	- - - - -	<i>Mr. L. Tugwell</i>	7	330
Pellitory of the wall, observations on	- - - - -	3	43	
Plaster of Paris, used as a manure	- - - - -	<i>Mr. J. Kirkpatrick</i>	5	225
Plants eaten or rejected by cattle, experiments thereon recommended	- - - - -	<i>X. Y. Z.</i>	1	70
Plants noxious to cattle, to be extirpated, and nutritive ones recommended	- - - - -	<i>Mr. Axford</i>	1	206
— and trees, observations on a variety of,	- - - - -	<i>Mr. A. Crocker</i>	3	31
— the characteristic distinctions of	- - - - -	<i>Sir T. Beevor, bt.</i>	6	103
Plantations in general, observations on	- - - - -	6	175	
Plough, a Russian one, described	- - - - -	<i>Mr. J. Grivne</i>	3	368
— a new one described	- - - - -	<i>Mr. J. Adam</i>	5	428
— with a double mould-board, account of	- - - - -	7	247	
Ploughs, report respecting the trials of at Barrack's-farm in March 1788	- - - - -	4	441	
— report of a trial of, near Devizes, in April 1790	- - - - -	<i>Rev. J. H. Close, and others</i>	5	471
Poison of lead	- - - - -	<i>Dr. Fothergill</i>	5	351
— its effects	- - - - -	5	355	
— how received into the body	- - - - -	5	358	

	Vol. page
Poison of copper vessels - - - - -	<i>Dr. Fothergill</i> 5 387
— its effects - - - - -	5 392
Ponds, for watering sheep and cattle - - - - -	<i>a Gentleman</i> 1 68
Poor, the best method of providing for	<i>The Secretary and</i>
— plan for the better maintenance of	<i>Mr. R. Pew</i> 6 208
Poor's rates, considerations on - - - - -	<i>Mr. T. Hall</i> 6 254
— laws, remarks on Mr. Pew's ob- servations thereon - - - - -	<i>Mr. M. Martin</i> 7 101
Poplars, black and white, mode of planting - - - - -	<i>the same</i> 7 107
Potatoes, culture of - - - - -	<i>Mr. J. Wagstaffe</i> 3 88
— ditto - - - - -	<i>Rev. J. Higson</i> 1 26
— ditto - - - - -	<i>Norfolk Agriculture Society</i> 1 30
— ditto - - - - -	<i>Mr. T. Pavier</i> 1 32
— a profitable food for cattle and hogs - - - - -	1 33
— the raising of from seed - - - - -	<i>Rev. W. Lamport</i> 1 136
— curled, abstracts of sundry let- ters thereon - - - - -	<i>Manchester Agricul- ture Society</i> 1 236
— the culture and produce of - - - - -	<i>J. A.</i> 2 68
— the prime of a crop supposed to be the best for planting - - - - -	<i>a Subscriber</i> 2 247
— to prevent blights in - - - - -	<i>Mr. J. Smith</i> 2 297
— success of a late planted crop - - - - -	<i>T. S.</i> 2 361
— the produce of six acres - - - - -	<i>J. Billingsley, esq;</i> 3 109
— culture of - - - - -	<i>Rev. J. H. Close</i> 3 111
— culture, expence, and produce of six acres - - - - -	<i>J. Billingsley, esq;</i> 3 122
— instructions for the raising of - - - - -	<i>Mr. J. Hazard</i> 3 292
— different sorts described - - - - -	3 302
— the Essex mode of cultivating - - - - -	<i>Rev. J. Ogle</i> 3 318
— culture of - - - - -	<i>Mr. J. Webb</i> 3 328
— experiments and observations on the culture of - - - - -	<i>Dr. J. Anderson</i> 4 7
— the effect of cutting the stems while growing - - - - -	4 38
— a fine ardent spirituous liquor, extracted from them - - - - -	4 48
— observations on their distin- guishing characteristics - - - - -	4 59
— method of raising from seed - - - - -	4 68
— the curl considered - - - - -	4 92
— method of cultivating - - - - -	<i>Mr. Woodbine</i> 4 238
— the culture, expence, and pro- duce of, near London - - - - -	<i>Mr. W. Braines</i> 4 255

		Vol.	Page
Potatoes, experiments on		4	286
ditto		4	441
the culture of	Mr. J. Wimpey	5	27
hints respecting them	Dr. Anderson	5	64
the raising of from seed	the author	5	127
experiments to ascertain whether cuttings or whole bulbs are to be preferred in planting	Mr. Wimpey	5	230
experiments on		5	423
observations on		6	92
experiments on		6	206
the culture of, with many judicious observations thereon	J. Billingsley, esq;	6	339
the culture of	Mr. Martin	7	101
their use, and the advantage of drilling	Rev. J. H. Cope	7	319
the management of, to prevent the curl	Mr. J. Chapple	7	350
Poverty, plan for the general prevention of	Mr. Peto	7	311
Premiums of the Society, remarks on		2	191
Provident societies, beneficial		6	214
Querries from the society on soils, course of crops, manure, drain, wood, lucerne, turnip-husbandry, sowing, oxen, horses, rot in sheep, and implements in husbandry, with answers thereto	Sheriff of Norfolk	1	51
answered by,	E. Sampson, esq;		
	Sheriff of Gloucestershire	1	156
	Rev. Mr. Hill	3	100
	R.P. Anderson, esq;	2	48
on oak timber, from the Commissioners of the Land Revenue			
to the Chairman of the Quarter-Sessions of the county of Norfolk, with answers thereto		6	94
Quick-hedges, method of raising		2	212
Rake for corn stubbles	Mr. G. Relford	1	44
Rape, the culture of	J. B. Edwards	3	124
a fattening winter feed for sheep	ppib	2	122
culture of	Mr. J. Hanard	4	195

	Vol. Page
Rape, culture of	6 307
Rats, method of destroying	2 384
Rennet, method of making	3 161
recipe for making	Mr. A. Crocker
Reservoir in a farm-yard, described	4 290
<i>Rheum Palmatum</i> , the cultivation and curing of	Mr. R. Price
account of	R. D.
Rhubarb, cultivation of	S. S.
ditto	a Norfolk Gent.
ditto	G. P.
ditto	the same
a reply to some enquiries thereon	Dr. Lettsom
ditto	Dr. Hope
advantages of cultivating	Dr. Falconer
the growth of	a Norfolk Gent.
observations on	Dr. J. Fothergill
different species of	Mr. R. Pulteney
English, examination of	Drs. Falconer and Parry
experiments with	Mr. Farnell
remarks on	Dr. Falconer
experiments with	Dr. Parry
observations on the effects of different sorts	the same
an estimate of the comparative virtues of different species	Dr. A. Fothergill
English, examination of the virtues thereof	Drs. Lettsom, Hope, Cuming & others
culture and management of in Tartary	4 180
method of propagating	Mr. T. Hayes
observations on the growth of	Mr. G. Poole
River weeds, a manure	Mr. J. Wagstaffe
ditto	the same
ditto	the same
Roller, iron one for drilling	Sir T. Beevor, bt.
a new one described	—
<i>Roota-Baga</i> , observations on	Sir T. Beevor, bt.
ditto	—
ditto	—
ditto	—
Roses wild, observations on	Gent. in Scotland
Rot in sheep, thoughts on	Mr. B. Pryce
ditto	J. B.
ditto	J. C.

		Vol. Page
Sainfoin, increases milk in cows fed therewith	J. B.	1 163
— culture and usefulness of	P. W.	2 367
— observations on	—	5 49
— cultivation of in Gloucestershire	—	7 227
Scab in sheep, remarks on	T. B.	2 231
Scotch cabbage, turnips, and turnip-rooted cabbage, comparative value of	J. D.	2 103
Scotch fife, observations on	—	3 41
— a food for cattle	Drs. Andersen	5 122
Sea weed, a manure	—	1 25
Seed grain, considerations on the quantity unnecessarily sown in the broadcast	X. Y. Z.	2 170
— the quantity most proper to be sown	—	5 9
Seminal varieties of plants considered	—	4 80
Seminal variations in peas and beans	—	5 37
Sheep and cattle, advantages of crossing the breed	Mr. B. Smith	2 363
— observations on the disease called the wind	Mr. J. Webb	4 241
— observations on the blast	Mr. W. Potticary	4 244
— the best breed, for carcass and wool	Rev. C. Onley	6 143
— number of in Dorsetshire	—	7 66
Sheep-feeding, a particular return of an experiment thereon	J. Billingsley, esq;	7 352
Sheep-fescue, observations on	—	3 32
Siberian barley, account of	Mr. E. Howman	1 108
— culture of	Norfolk Agr. Society	1 146
Silkworms, the management of not unhealthy	Miss Hen. Rhodes	4 319
Smut in wheat, observations on	—	5 40
— an enquiry concerning it	—	5 244
— remarks on	Mr. J. Wagstaffe	5 270
— the cause of	Mr. J. Wimpey	6 116
— observations on	Mr. J. Wyborn	6 186
— ditto	the same	6 191
— ditto	W. R.	6 195
— ditto	Mr. J. Wimpey	6 198
Soaper's ashes, a top-dressing for wet lands	—	1 23
— a manure	J. B.	1 129
Societies, the utility of friendly ones described	a Member	3 370

TO THE SEVEN VOLUMES.

387

	Vol. Page
Soils, (as clayey, chalky, light, rich, and coarse) the different natures of, and respective management - <i>B. K.</i>	2 180
— the nature of, and grain proper to each sort - <i>T. S.</i>	2 199
Somersetshire, a brief history of a part of <i>Mr. R. Locke</i>	5 180
Soot, a dressing for meadow land -	1 23
Sowing, hints for the time of, from sundry phenomena of nature - <i>Mr. J. Wagstaffe</i>	5 265
— of grain, a new method -	6 188
— machine, applicable to both drill and broadcast husbandry, de- scribed - <i>Mr. J. Horn</i>	3 229
Spanish chestnut, considerations on -	6 273
Spirituous liquors, their evil effects on publick and private property - <i>Dr. Fothergill</i>	7 253
— their effects on the hu- man body -	7 257
— their effects on the mind and morals -	7 263
Squirrels, mischievous in plantations — their depredations in planta- tions considered -	Sir T. Beevor, bt. 6 89
— ditto -	T. Davis, esq; 6 172
— ditto -	J. Bernard, esq; 6 259
Sward-cutter, description of, with an account of its use -	Mr. B. Pryce 6 254
Swine, experiments on the feeding of - <i>G. Winter, esq;</i>	3 346
Swing-plough, description of - <i>Mr. J. Adam</i>	5 428
Thistles, observations on - <i>Mr. W. Curtis</i>	1 96
Timber, comparative duration of va- rious sorts -	Sir T. Beevor, bt. 3 166
— an enquiry into the present state of -	Mr. J. Wimpey 7 22
— the advantages which may be derived from an extended cultiva- tion of -	the same 7 32
— for naval purposes, the pre- sent state of -	T. South, esq; 7 46
Timber trees, the bulk and increase of some which are remarkable - <i>Mr. R. Marsham</i>	1 74
— the growth of various sorts - <i>a Norfolk Gent.</i>	5 444
Timber in woodlands, to be encouraged -	7 15
Tithes, an equitable commutation for - <i>Mr. B. Pryce</i>	4 109

		Vol.	Page
Traveller's joy [<i>apocynum</i>] destructive to young hedges	—	2	216
Trees, the planting on barren heights recommended	—	5	260
<i>Trifolium alpestre</i> , remarks on	—	4	213
Turnips, the hoeing of, in Suffolk — to preserve from the fly	—	1	18
— mode of cultivation in Suffolk	—	5	92
— husbandry tends to the ex- clusion of fallows	—	a Gentleman Farm.	1 133
— management of, near Norwich	—	A. Young, esq;	2 65
— comparative value of, with turnip-rooted cabbage, and Scotch cabbages	—	—	2 94
— to preserve from the fly	—	J. D.	
— sowed between drills of wheat	—	G. K.	
— the preserving of from the fly	—	T. N.	
— the culture of	—	a Norfolk Far	
— the mode of sowing to prevent the ravages of the fly	—	J. L.	
— to preserve from frost	—	Mr. C. Gullett	
— cultivation of	—	W. P.	
— between beans in a clay soil	—	E. N.	
— with beans, observations on	—	R P. Anderdon,	3
— and beans, in alternate rows	—	Mr. T. Pavier	142
— the necessity of hoeing	—	Mr. J. Bult	278
— strictures on the husbandry of	—	A. Young, esq;	3 314
— means of insuring full crops	—	Mr. J. Wimpey	4 137
— experiments on	—	Mr. C. Gullett	4 207
— mode of cultivating in Glo- cestershire	—	—	4 276
— food for horses	—	—	7 229
— Turnip transplanter, the construction of	—	—	7 246
Turnip-rooted cabbage, culture of	—	Mr. J. Kirkpatrick	4 226
— ditto	—	Sir T. Beevor, bt.	3 117
— use and value of	—	Mr. T. Robins	3 219
— produce of	—	Sir T. Beevor, bt.	4 296
— account of	—	the same	5 421
— culture of	—	Rev. T. Broughton	5 453
— ditto	—	the same	5 454
— observations on	—	Sir T. Beevor, bt.	6 87
— experiments	—	Rev. T. Broughton	7 335
thereon	—	T. B.	7 341
Vegetation, answers to queries thereon	—	Mr. J. Wimpey	2 24
— ditto	—	the same	2 55

	Vol. Page
Vegetation, an enquiry concerning the principles of	<i>Mr. J. Wimpey</i> 3 170
— a practical enquiry concerning the most effectual means of promoting it	<i>ibidem</i> 3 186
— of old grain, considered	<i>S. Smith, esq;</i> 5 464
Vermine in gardens &c, the destruction of	<i>Mr. Jacob</i> 1 223
Washing machine, described	<i>Mr. H. Murrell</i> 5 469
Waste lands, the planting of	<i>Mr. W. H——n</i> 2 219
— the advantage of planting belonging to the Crown, — of improving	<i>Mr. J. Wagstaffe</i> 4 305
— in North-Wiltshire, confi- ons on	<i>Mr. T. Pavier</i> 4 310
— agnant, useful as a manure	<i>R. S.</i> 7 194
— meadows, their properties, mode king, their management, and itages described	<i>ibidem</i> 1 168
— considered	<i>Mr. G. Eastwell</i> 2 85
— ditto	<i>R. P. d. and others</i> 2 142
— mills, considerations on	<i>ibidem</i> 7 215
— as among wheat, to destroy	<i>Mons. de Brosses</i> 2 116
— ditto	<i>ibidem</i> 3 43
Wheat, the use, progress, and mode	<i>a Gentleman near</i>
— of setting in Norfolk	<i>Norwich</i> 1 1
— setting it, described	<i>a Gentleman Farm.</i> 1 5
— queries and answers respecting	<i>the same</i> 1 10
— the setting thereof	<i>a Gentleman Farm.</i>
— the practice of setting in Nor- folk and Suffolk	<i>in Suffolk</i> 1 13
— the feeding of with sheep, in	<i>a Gentleman Farm.</i>
— the spring, thoughts on	<i>in Essex</i> 1 65
— the grain thereof, better from	<i>ibidem</i> 1 105
— planting than from sowing in broadcast	<i>R. M.</i> 2 145
— advantages of setting and drilling	<i>ibidem</i> 2 172
— the best time of sowing	<i>Rev. Mr. Close</i> 3 225
— experiments on horse-hoeing	<i>Sir T. Beevor, bt.</i> 3 259
— thereof	<i>Mr. J. Wagstaffe</i> 3 337
— observations on the setting of	<i>Mr. J. Rogerston</i> 3 340
— to preserve from Weevils, &c.	<i>Mr. R. Bogle</i> 3 362
— experiments on the planting of	<i>Sir J. Anstruther</i> 3 379
— experiments on the dividing and	<i>Sir T. Beevor, bt.</i> 3 394
— transplanting the roots of	
— the increase of	
— remarks on the setting of	

	Vol. Page
Wheat, the number of corns in a bushel -	3 391
— and other kinds of corn, the advantage of setting their plants -	3 492
— brining of	4 281
— smutty, the recovery of	4 283
— cure of the black rust therein -	Mr. R. Baker 4 288
— thoughts on transplanting -	Mr. J. Holt 6 163
— the expediency of sowing in the spring occasionally -	Mr. J. Wimpey 7 232
— and grain, mode of cultivating in Gloucestershire -	6 334
Wheat lands, their management and crops -	R.P. Anderdon, esq; 2 50
Willow, observations on	3 42
— the black, recommended	7 324
Wiltshire, general description of	7 113
— general state of landed property there	7 132
— ditto	7 183
Wiltshire husbandry, improvements in, suggested	7 166
Woad, observations thereon	4 273
Woods, the planting and management of T. South, esq;	5 1
— the present state of, in the Western counties, and best management thereof	T. Davis, esq; 7 1
— decayed ones to recover	7 6
Wool, a plan for the improvement of	5 65
— hints tending to improve the quality thereof	5 151
— of Dorsetshire, of fine quality	7 68
Woollen manufacture in Gloucestershire, state of	7 250
Zetland sheep, description of	Mr. J. Thompson 6 276

